Ice Drift and Draft Measurements from Moorings at the Confederation Bridge January – March 2000

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ABSTRACT

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Ice Profiling Sonars and Acoustic Doppler Current Profilers were moored near the Confederation Bridge during the winter months of 2000 to measure ice thickness and drift velocity. The instruments were moored parallel with the main navigation channel, on both sides of the bridge near pier 24. The data were gathered, in part, to complement measurements of bridge pier tilt, being conducted by the National Research Council for studies of ice forces on structures. Data are presented on ice draft displacement and current and ice speed as the ice approaches the bridge from both sides in a strong tidally driven environment with a mean flow to the southeast.

RÉSUMÉ

Hayden, H.,D. Belliveau, and S. J. Prinsenberg. 2002. Ice Drift and Draft from moorings at the Confederation Bridge January – March 2000. Can. Data. Rep. Hydrogr. Ocean. Sci. 158: iv + 186 p.

Des sonars profileurs de glace et des profileurs de courant à effet Doppler ont été mouillés près du pont de la Confédération au cours de l'hiver 2000, afin de mesurer l'épaisseur de la glace et la vitesse de dérive. Ces instruments étaient mouillés parallèlement au chenal de navigation principal, de part et d'autre du pont, près du quai 24. Les données recueillies avaient pour but de compléter les mesures de l'inclinaison des piles de pont réalisées par le Conseil national de recherches dans le but d'étudier les forces exercées par la glace sur les structures. On présente ici des données sur le déplacement d'eau dû à la glace ainsi que sur la vitesse de la glace et du courant à l'approche des deux côtés du pont, dans un milieu où l'action des marées est forte et où l'écoulement moyen a une direction sud-est.

1 INTRODUCTION

As part of field programs to study pack ice properties in the southern Gulf of St. Lawrence and Northumberland Strait, ice drift, ice draft and ocean current data were collected using moored Acoustic Doppler Current Profilers (ADCP) and Ice Profiling Sonars (IPS) from January until April of 2000. The instruments were deployed south of P.E.I., in Northumberland Strait, where the 13km-long Confederation Bridge links the Island with Canada's mainland (Fig.1). The data were gathered, in part, to support a study of ice forces on bridge piers being conducted by the National Research Council (Kubat et al., 2000). During the experiment, helicopter-borne sensors monitored the ice properties on several occasions (Prinsenberg and Peterson, 2001).

The bridge is located at the narrowest portion of the Northumberland Strait, where currents are highest. The primary axis of flow is along 310/130 degrees true. There is very little cross channel flow.

This report presents ice draft displacement and velocity data collected by the moored instruments.

2 MEASUREMENT TECHNIQUES / INSTRUMENTS

2.1 ADCP

ADCP's, manufactured by RD Instruments of San Diego, California, have been used since the late 1980's to measure ice velocity from moorings below the ice (Belliveau et al, 1990). These instruments use four acoustic beams to measure the water velocity and the ice drift as they pass above the mooring. By measuring the Doppler shift of the acoustic signal returned from scatterers in the water column and from the ice/water interface the instrument can determine the velocity of the water and ice. The ADCP uses a minimum of three valid beams to measure the two horizontal components of velocity. The vertical velocity can be measured using only two opposing beams. The vertical velocity is assumed to be zero on average and can be used as a data quality check. A more sensitive quality check is the difference between the vertical velocity as measured by the two pairs of opposing beams. This "error velocity" is very sensitive to surface waves and can be used to determine periods of open water. The ADCP provides a profile of the water velocity with bins of 1 to 8 meter depth averages. The bottom track measurement from an instrument moored on the bottom gives the ice velocity.

2.2 Ice Profiling Sonar

The Ice Profiling Sonar, manufactured by ASL Environmental of Sydney, British Columbia, was developed at the Institute of Ocean Science during the late 80's and early 90's (Melling et al, 1995). The IPS is a 420 kHz sonar with a 2 degree beamwidth, capable of pinging once a second to range off the bottom of the ice. The unit also has tilt sensors and a very accurate pressure sensor so the range data can be corrected for tidal and atmospheric variations to produce accurate measurements of ice draft.

2.3 Meteorological Data

Weather data were collected at the Confederation Bridge by IFN Engineering Ltd., under contract for Public Works Government Services Canada, the government department responsible for the bridge project. Weather data were also obtained from Environment Canada Weather Office in Summerside, Prince Edward Island. The data included wind speed and direction, atmospheric pressure and temperature. Atmospheric pressure from the Summerside sensor was corrected to sea level and was therefore used in the IPS process.

3 DATA

3.1 Instrument Set Up And Deployment

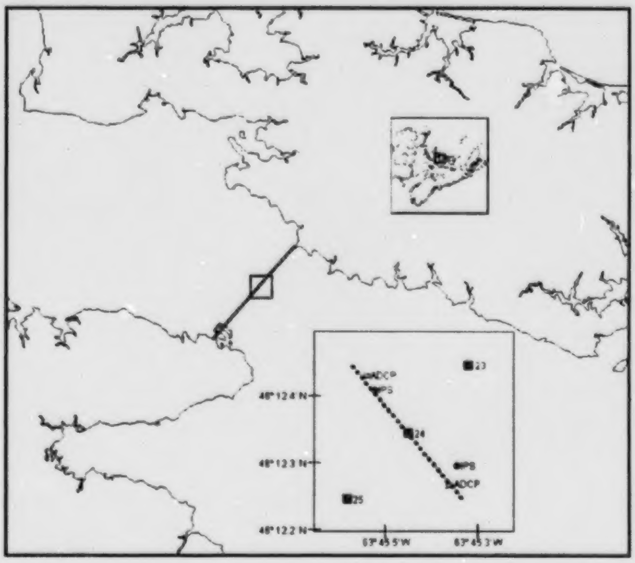


Figure 1. **Location map showing the Confederation bridge relative to the Maritime Provinces, and the location of the instruments in 2000 relative to Bridge Pier 24. The dotted line shows the primary axis of flow.**

In January of 2000, two pairs of instruments were deployed on either side of pier 24 (Fig. 1). The IPS units were approximately 150 metres from the pier along the main channel axis, with the ADCP slightly further out. The IPS units were located close to the pier at the request of the NRC researchers to try to provide better correlation between the ice thickness and speed, and the bridge tilt measurements. Note that the IPS to the northwest is almost directly in line with the flow past pier 24 to the northwest. The IPS's were set up to range every second. The ADCP was set up to collect the average current profile, 2m bins, and the average ice velocity every 15 minutes. The IPS's were mounted on bottom moored frames while the ADCP's were moored in sub-surface buoyancy packages.

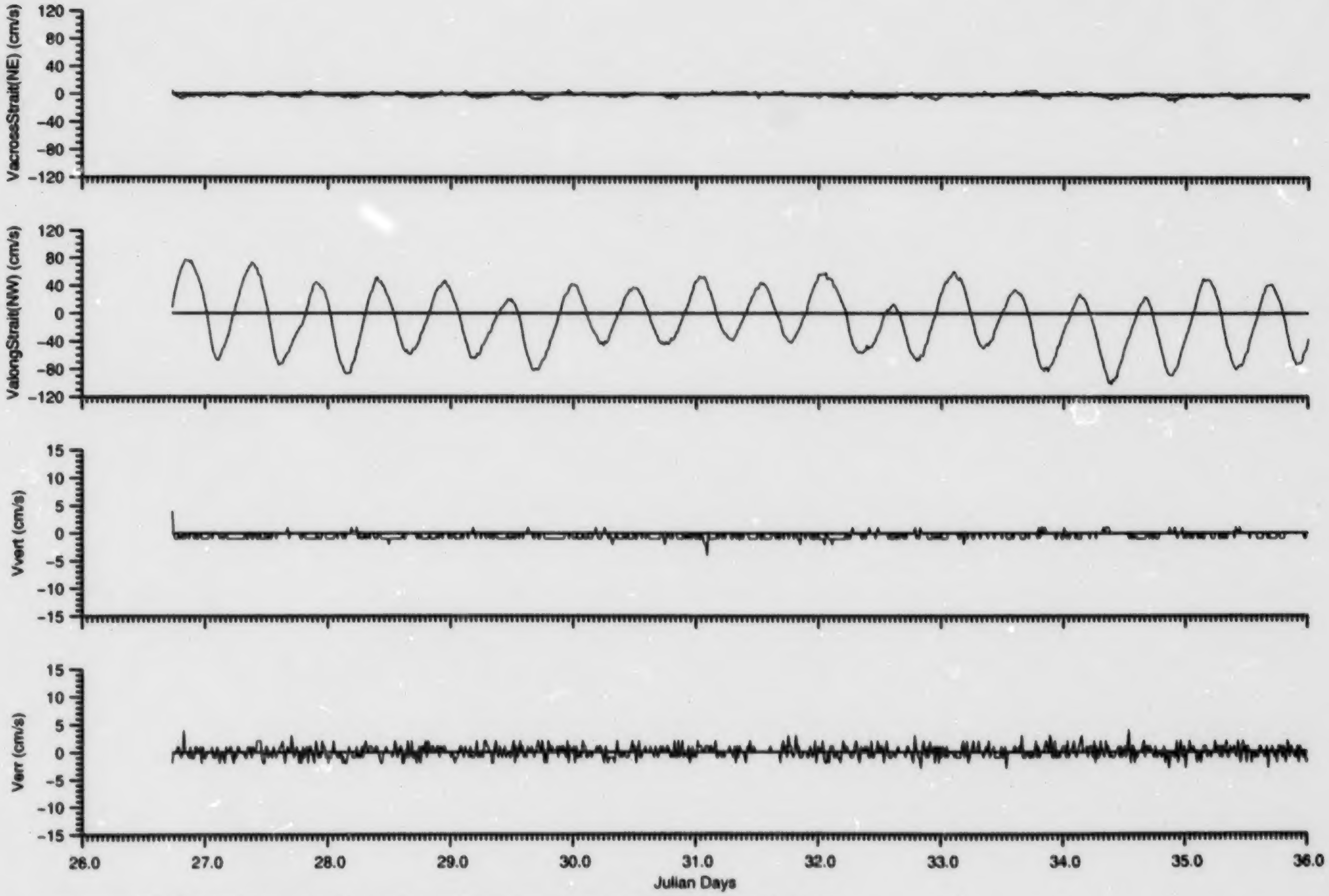
3.2 ADCP Current Velocity

Two ADCP's were deployed at the Confederation Bridge from January to April 2000. The instruments were initially processed with BBLIST provided by RD Instruments. A correction of +28.5° was applied in BBLIST to correct for -21.5° of magnetic variation and +50° to align the components of flow with the axis of the channel(310°/130°). Time was adjusted by +7.5 min from the start time recorded on the log sheet to reflect the center of the sample interval. Further processing and analysis were carried out using software developed at ASL Environmental with site and instrument specific changes made during processing. Water column bins above 6m were not processed due to noise as a result of sidelobe reflecting from the surface and ice.

3.2.1 ADCP 499 Northwest Mooring 1343, Jan 26 – Apr 22

ADCP 499 was deployed on a single mooring on the Northwest side of the Confederation Bridge on January 26th, at 46° 12.430'N°, -63° 45.540'W at 18m in a water depth of 20m with a 15 minute sample interval. Following are plots of 3 bins of the water column data, Bin 1 at 14m, Bin 3 at 10m and Bin 5 at 6 m.

Note that there are increased vertical and error velocities at times in Bin 5. This could be caused by deep ice ridges or waves interfering with the measurements in the near surface bin.



Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest Mooring 1343 14m

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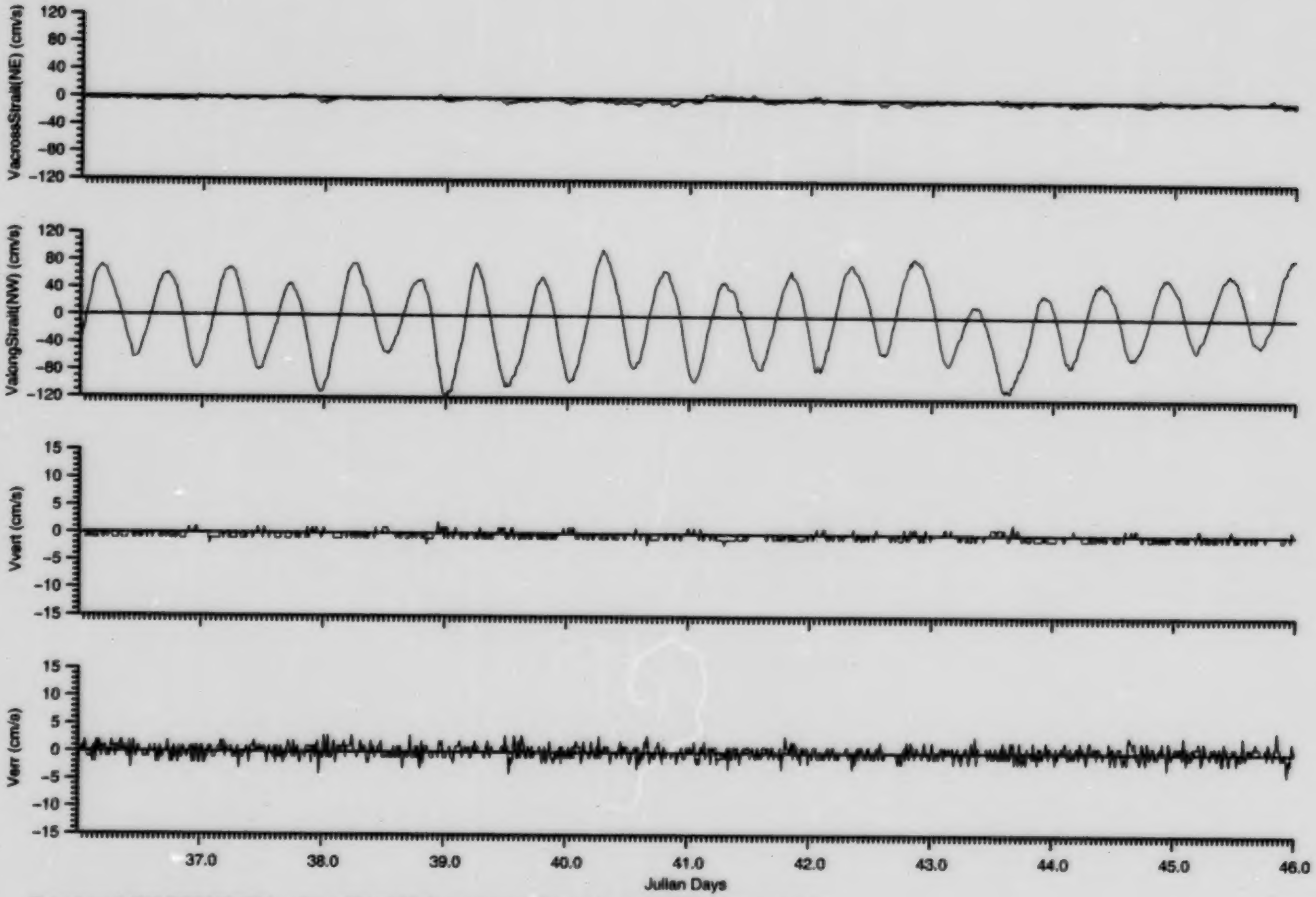

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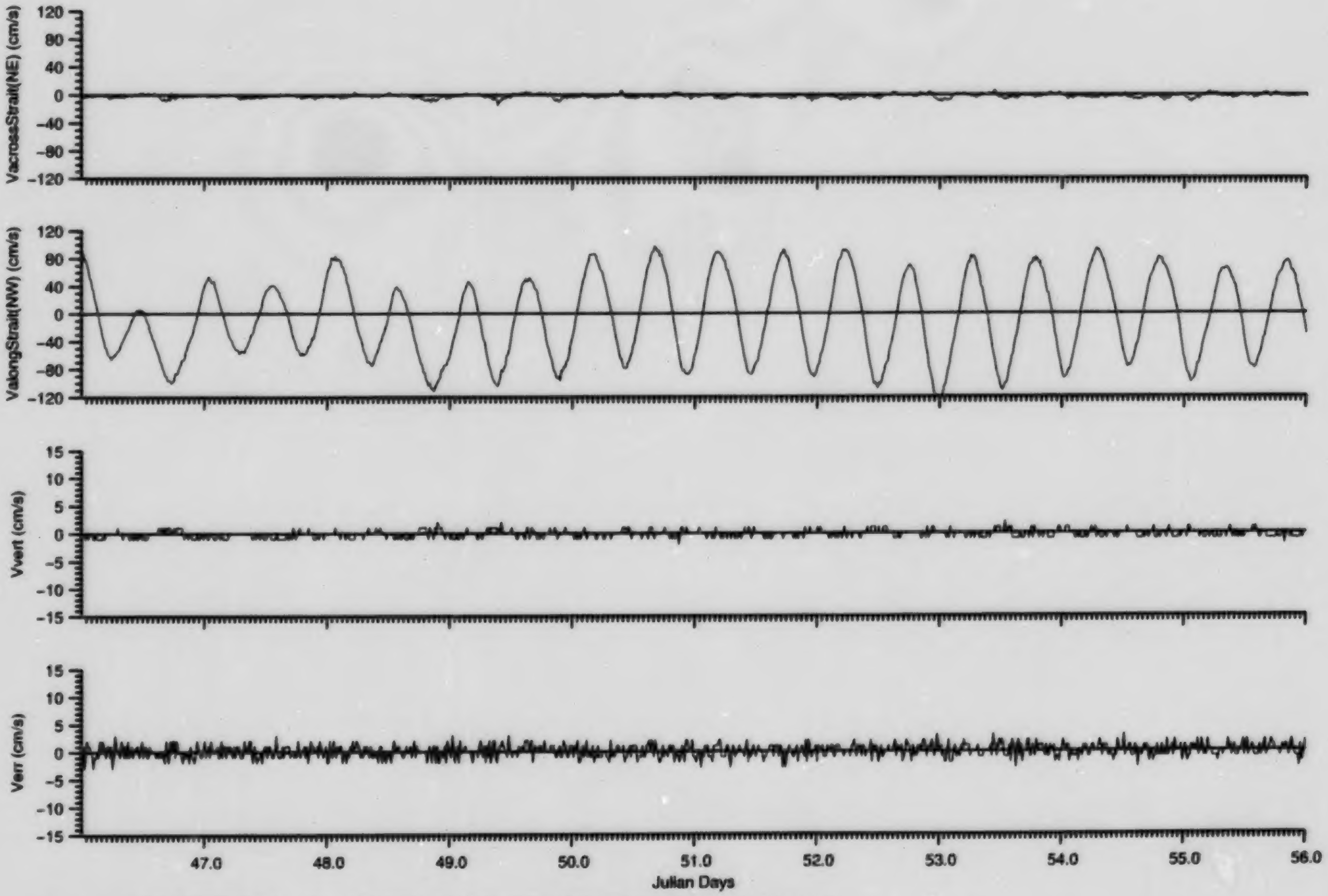

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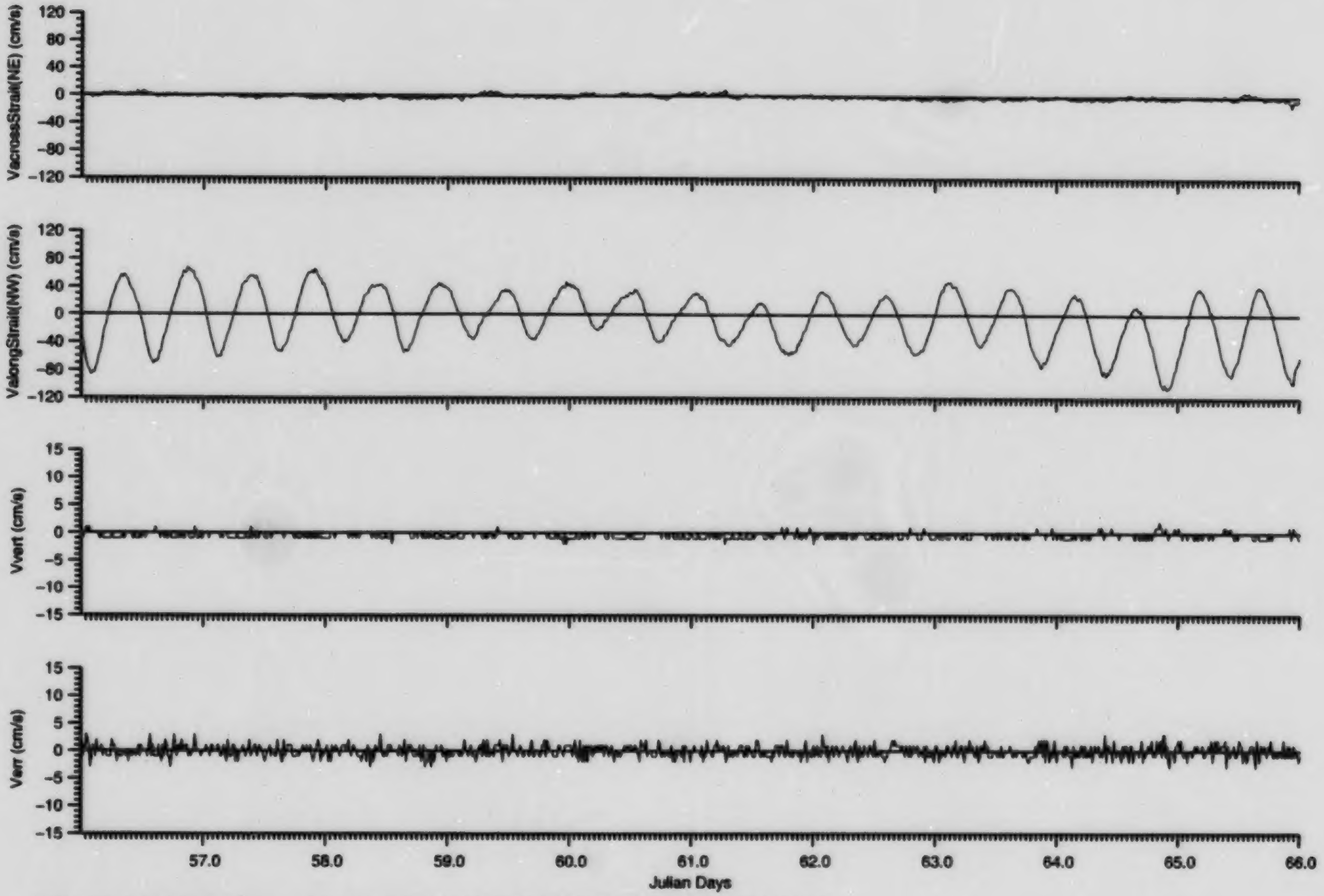

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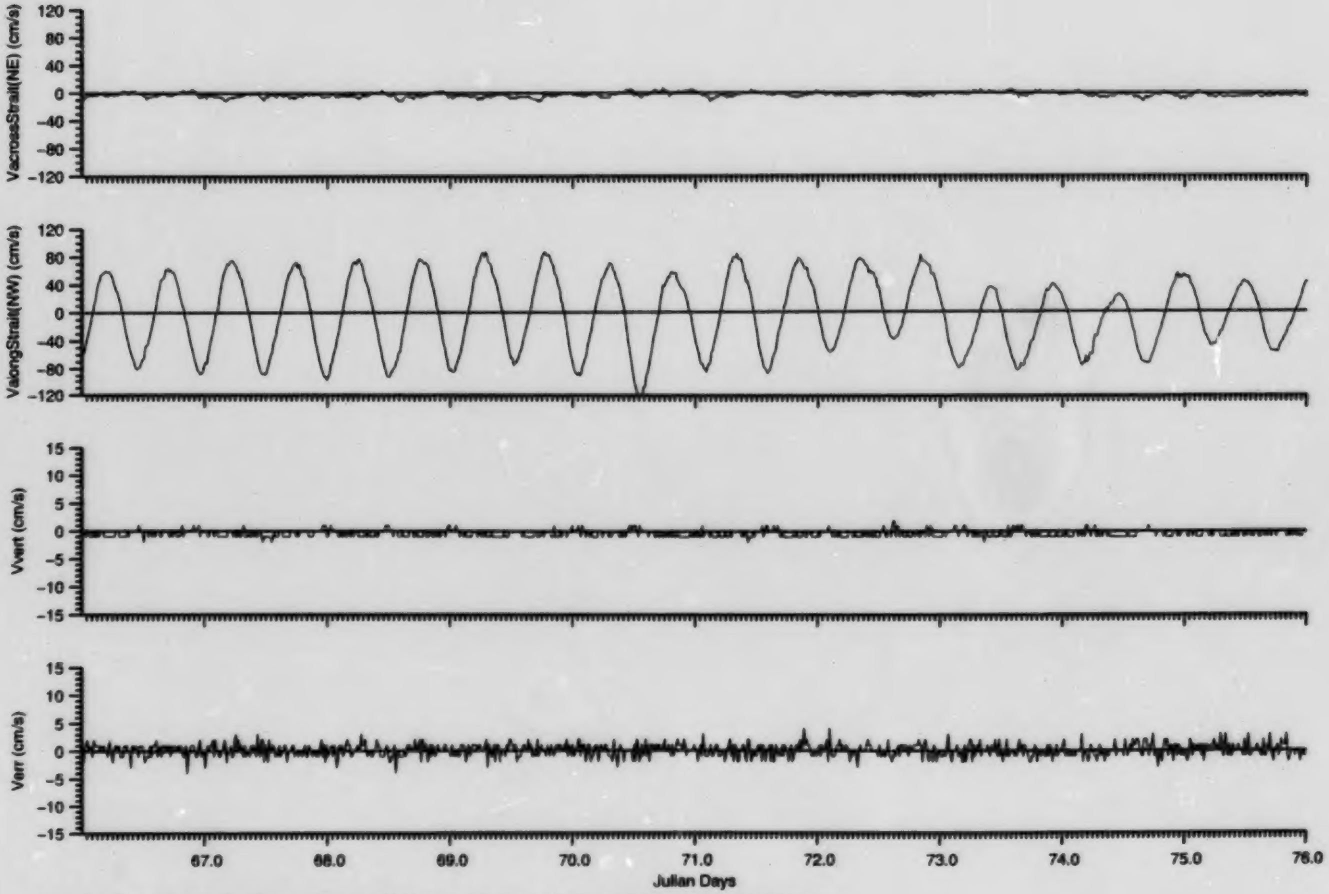

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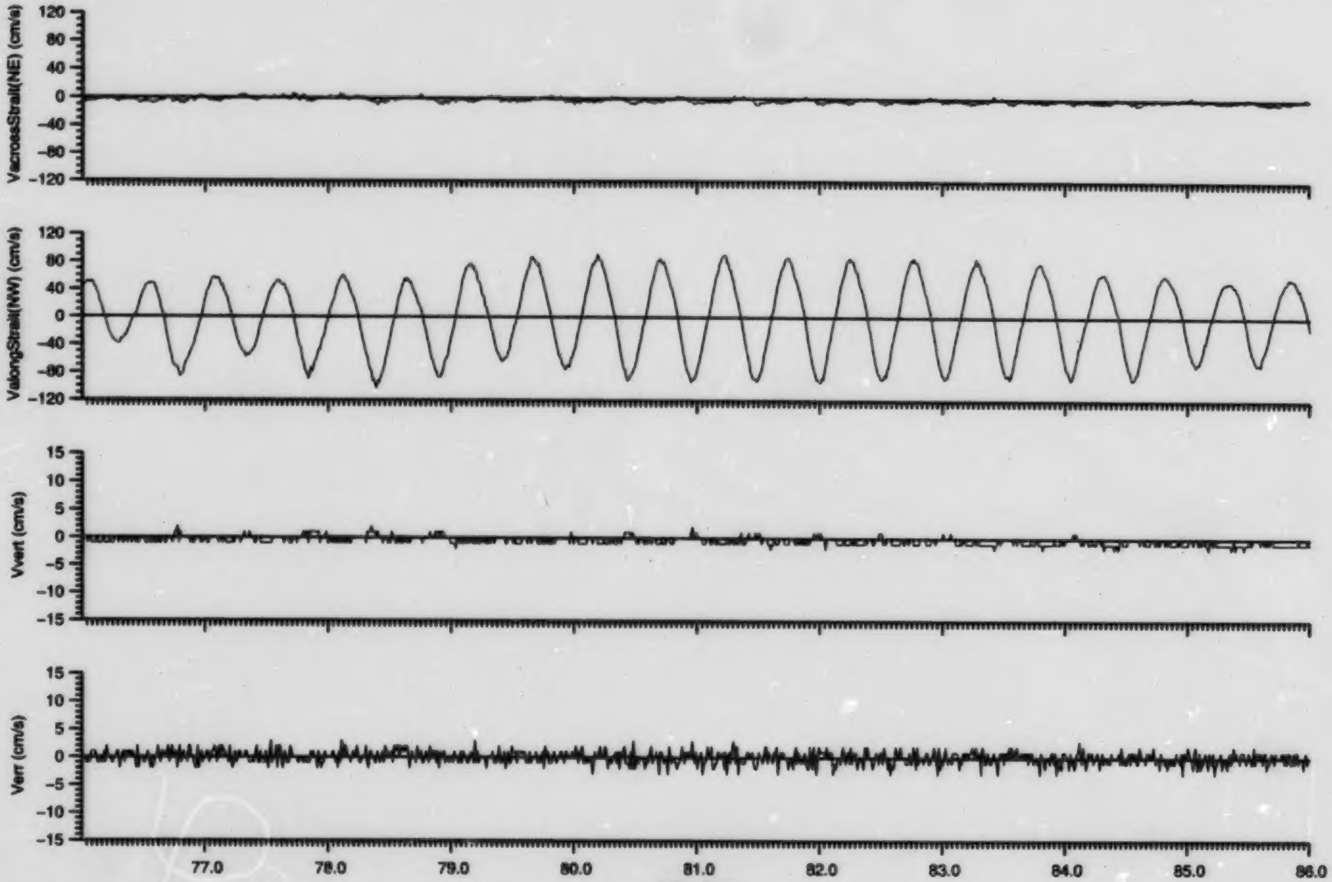

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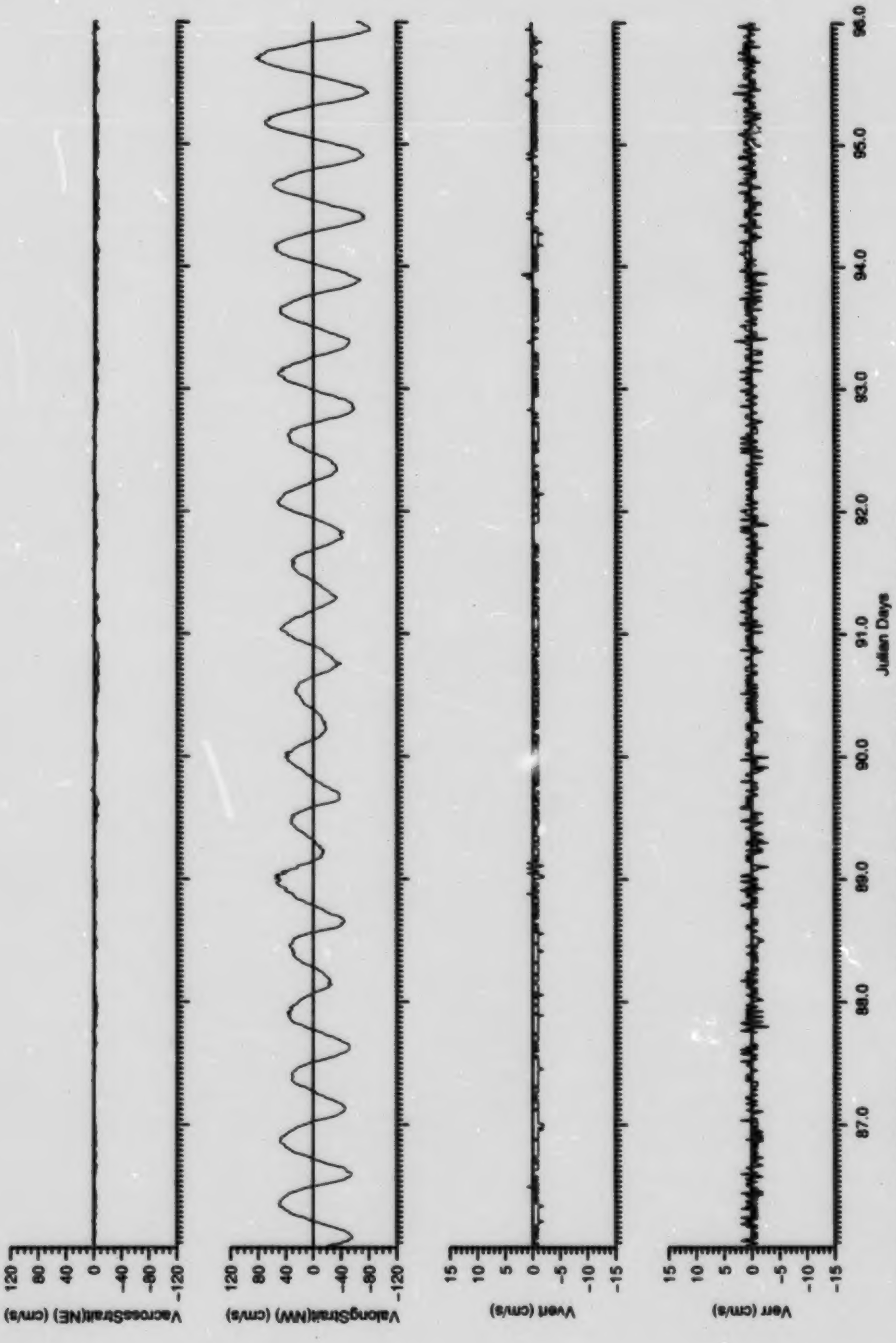

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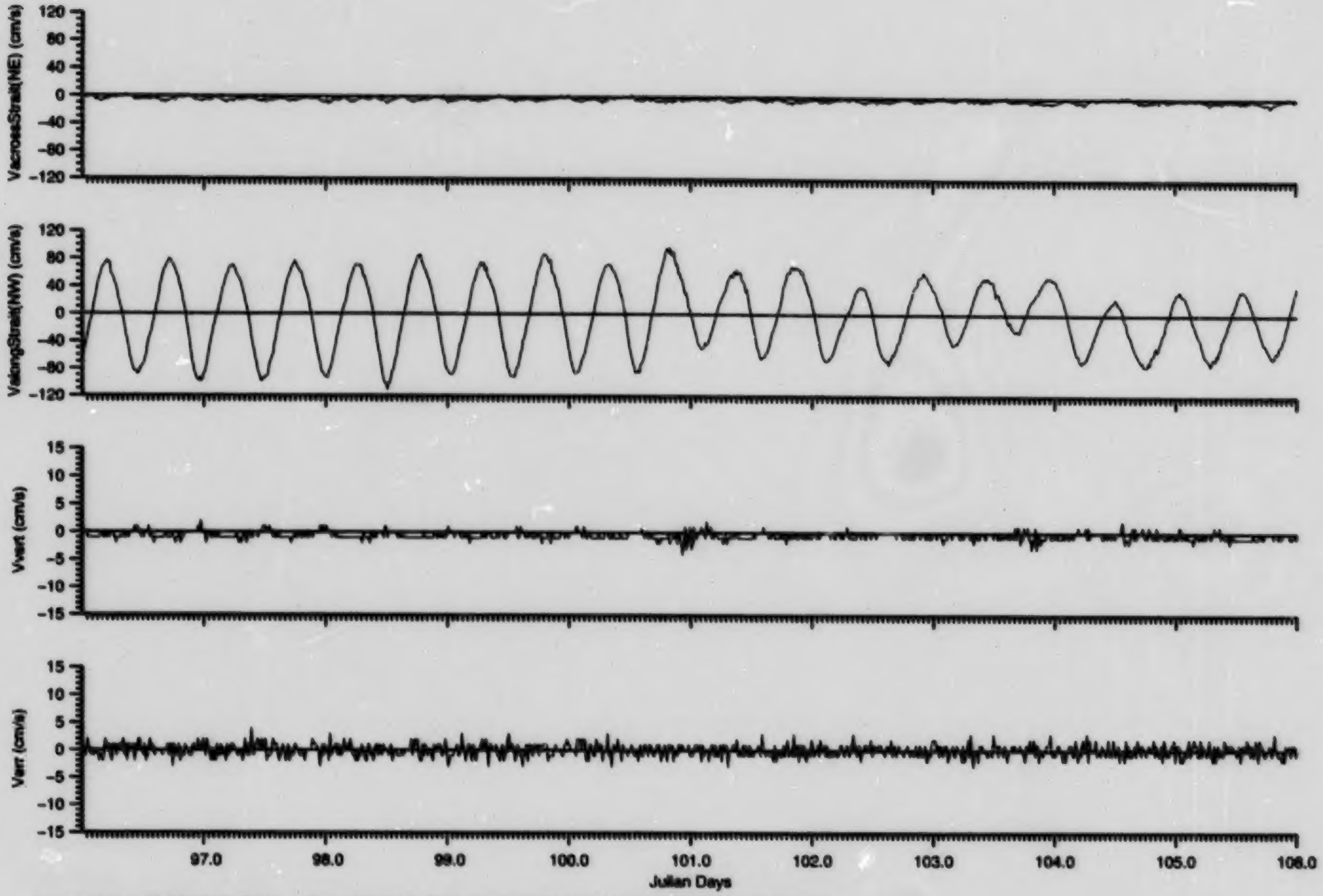

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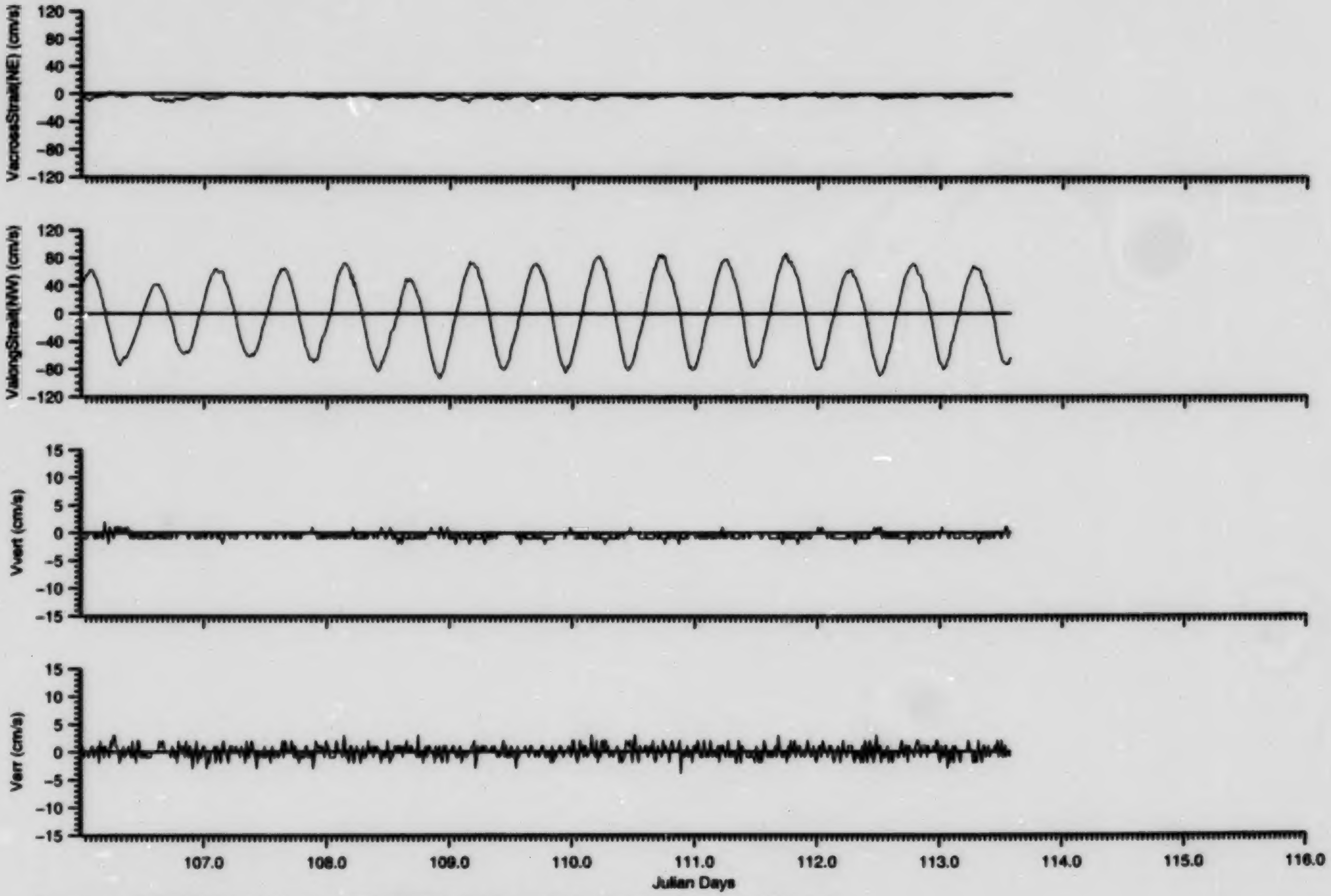
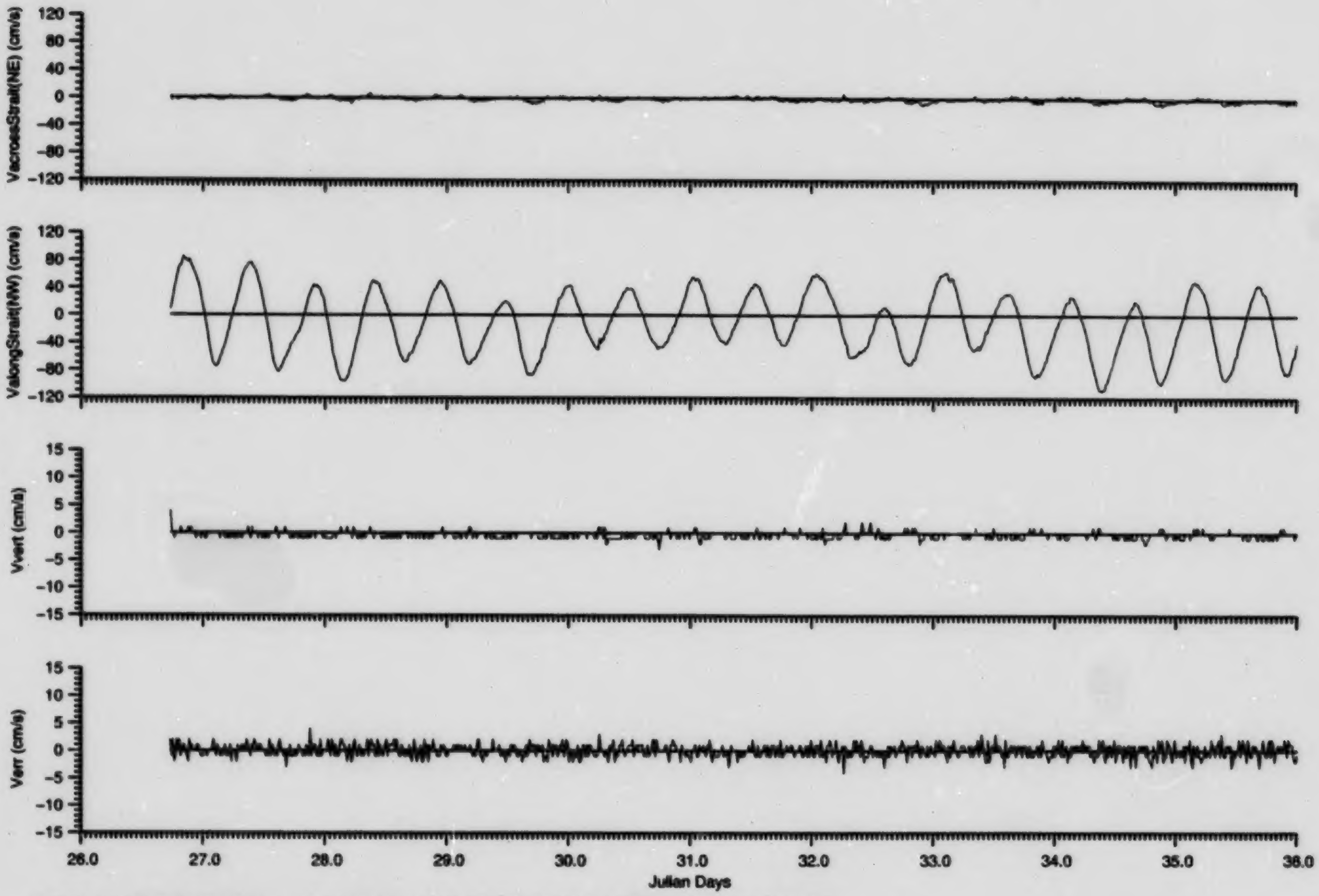


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest Mooring 1343 14m

Instrument: ADCP0499BIN1 Date: 2000/04/15 00:07:30.10 to 2000/04/22 13:52:30.11 GMT



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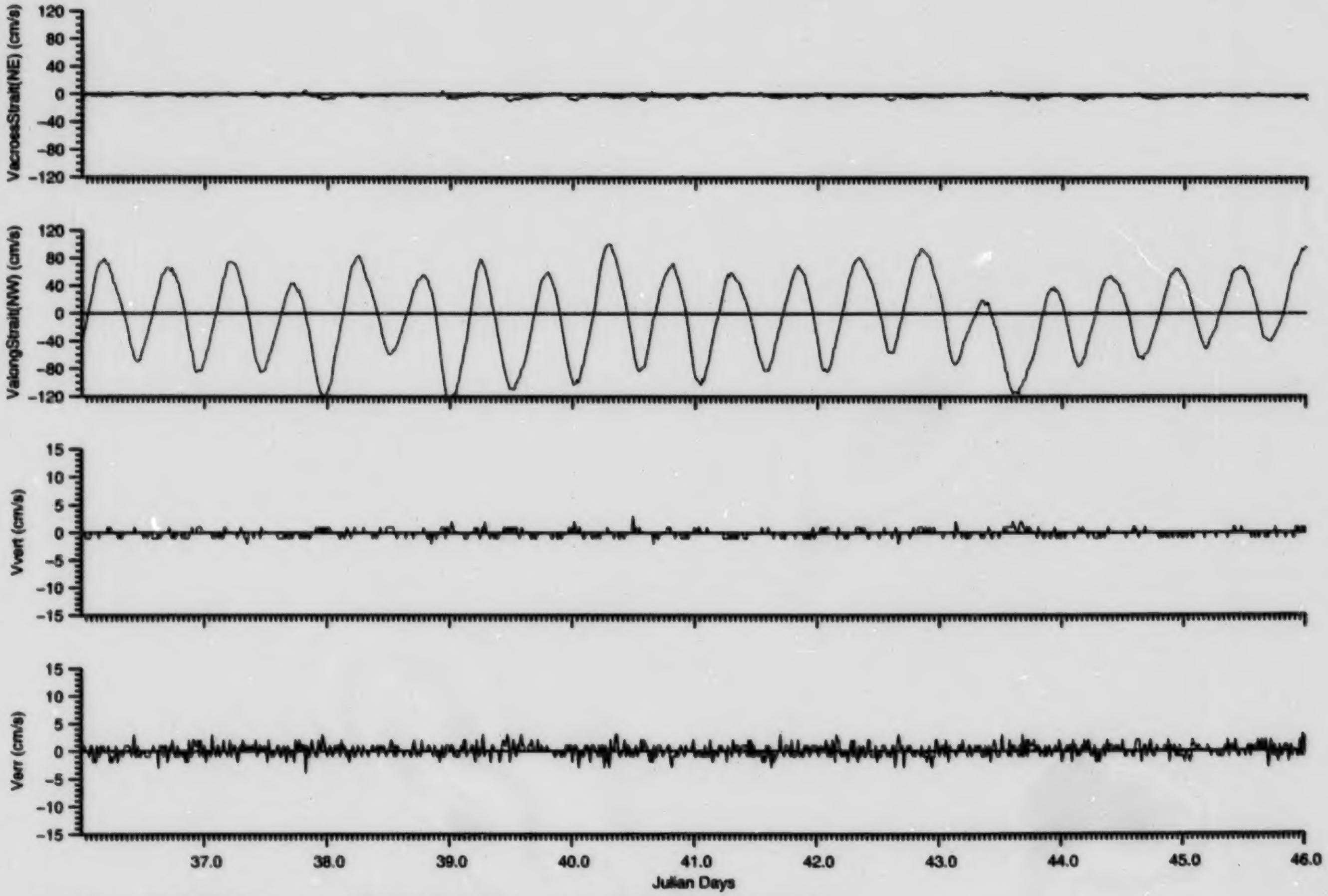

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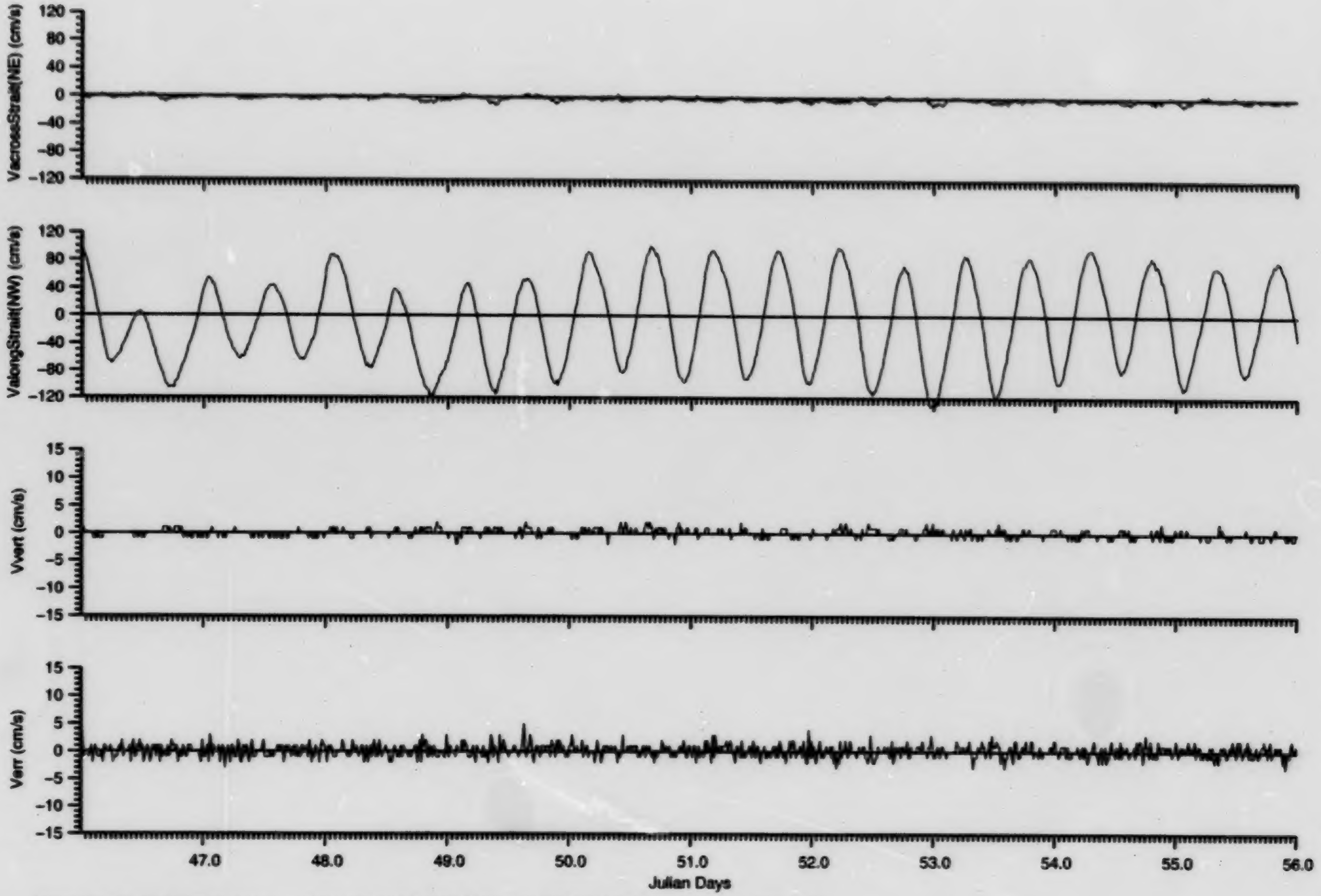

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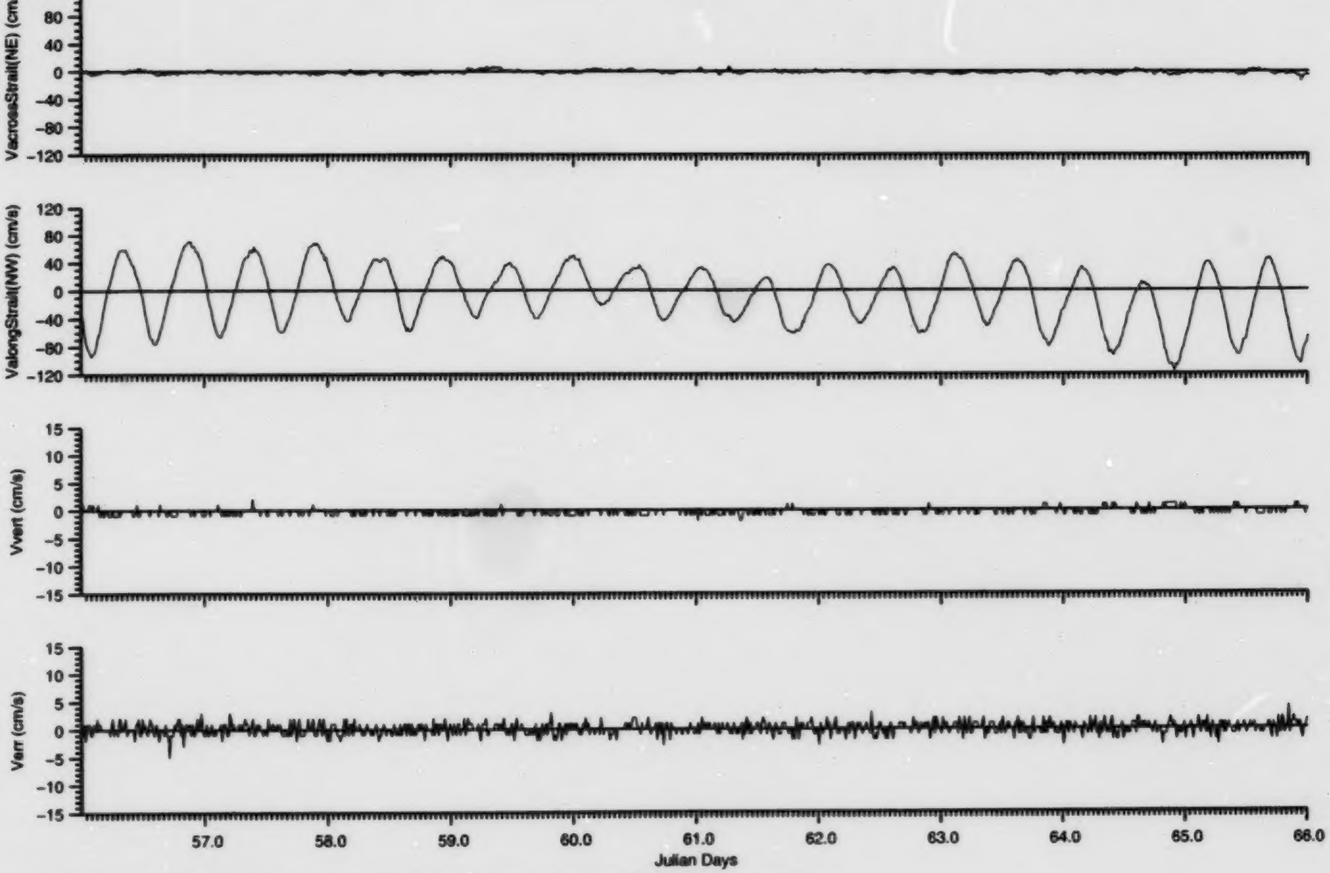

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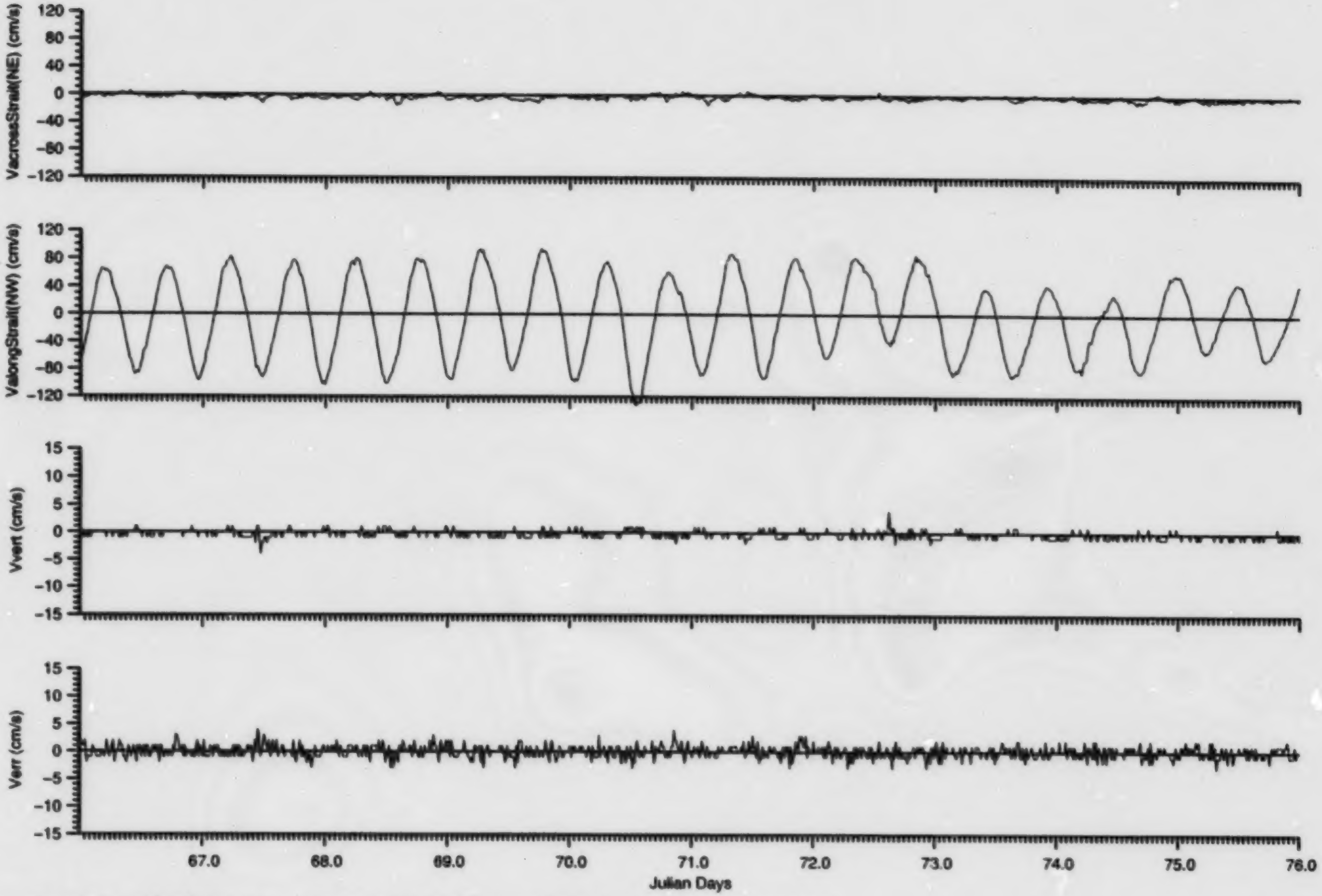

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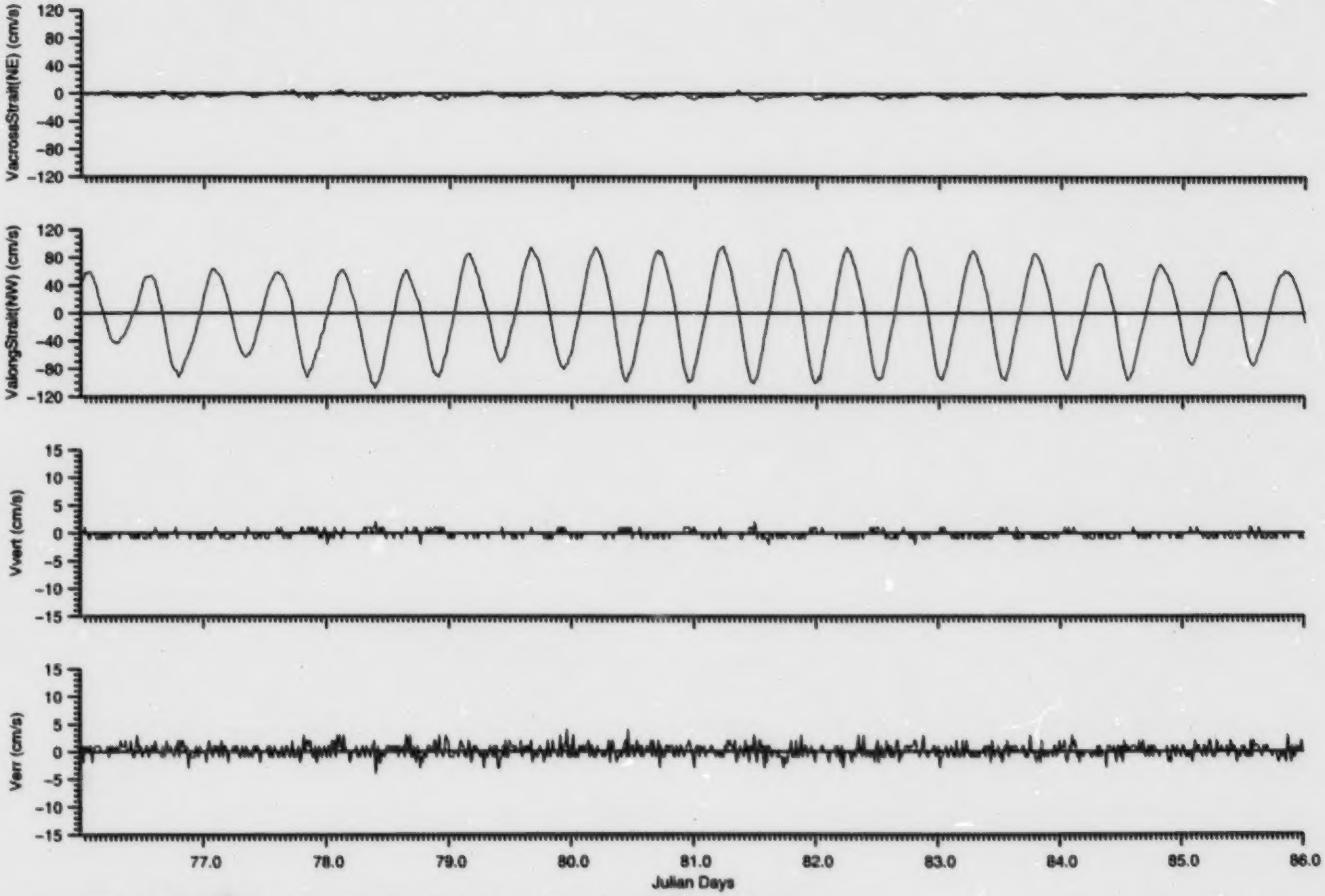

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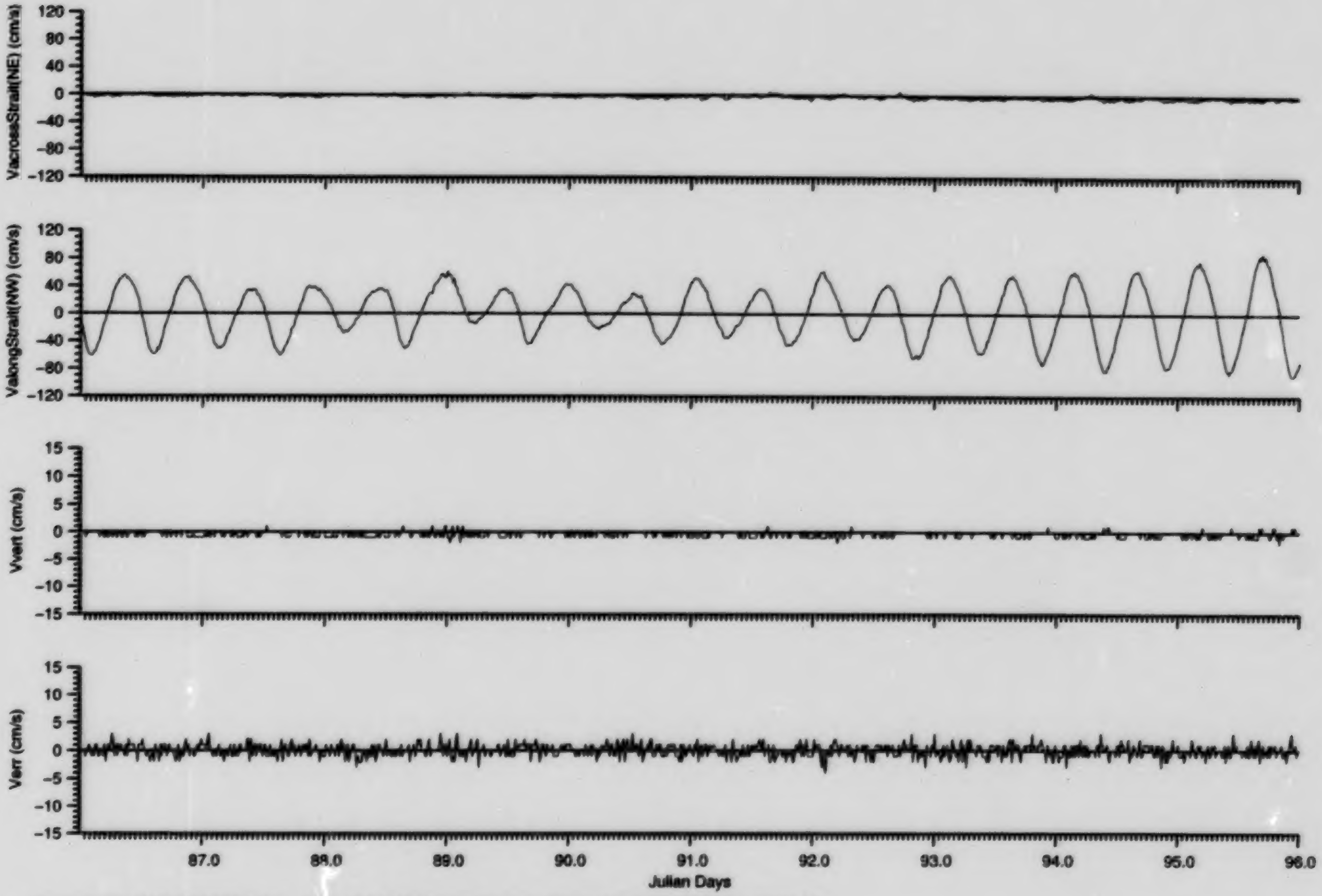

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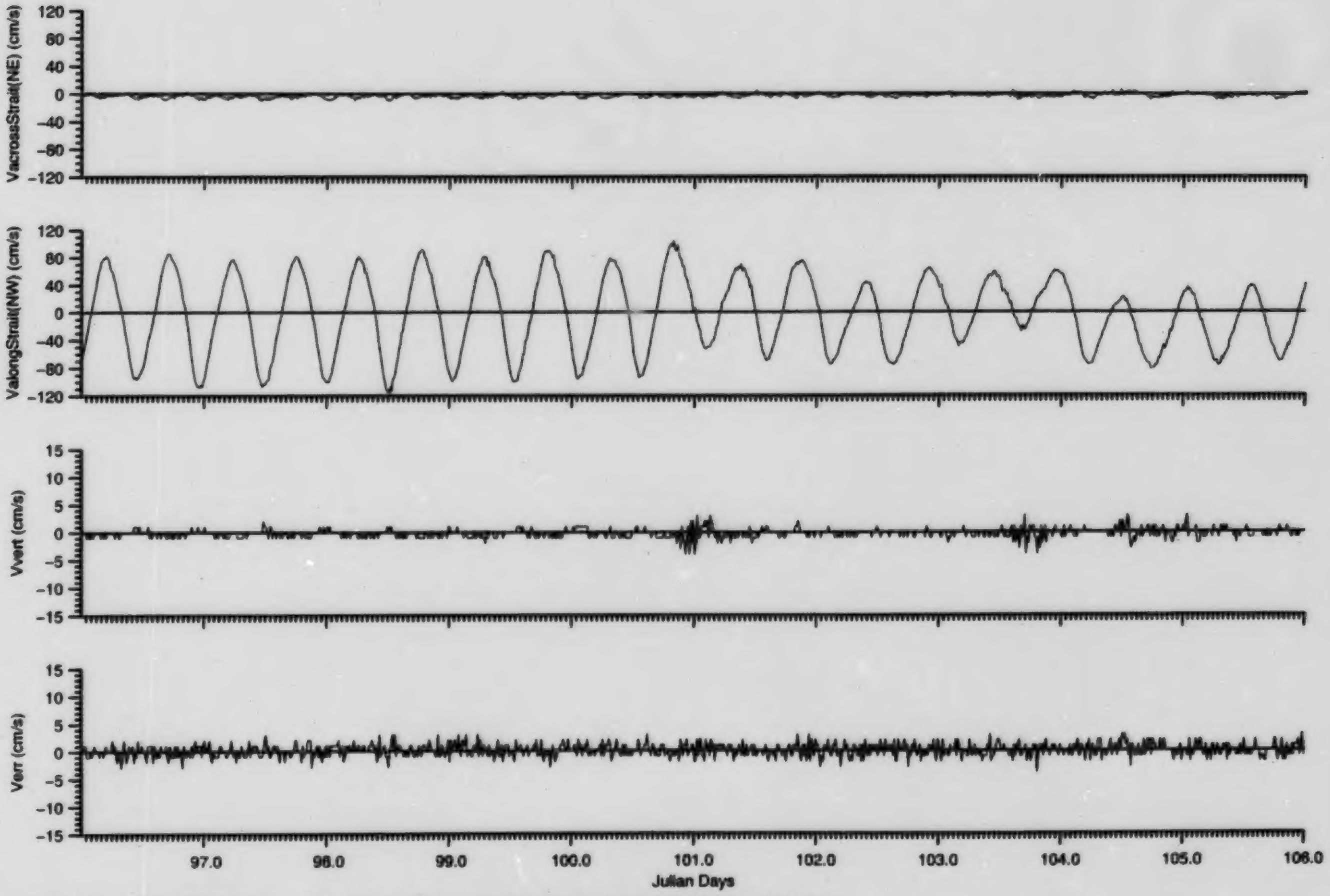

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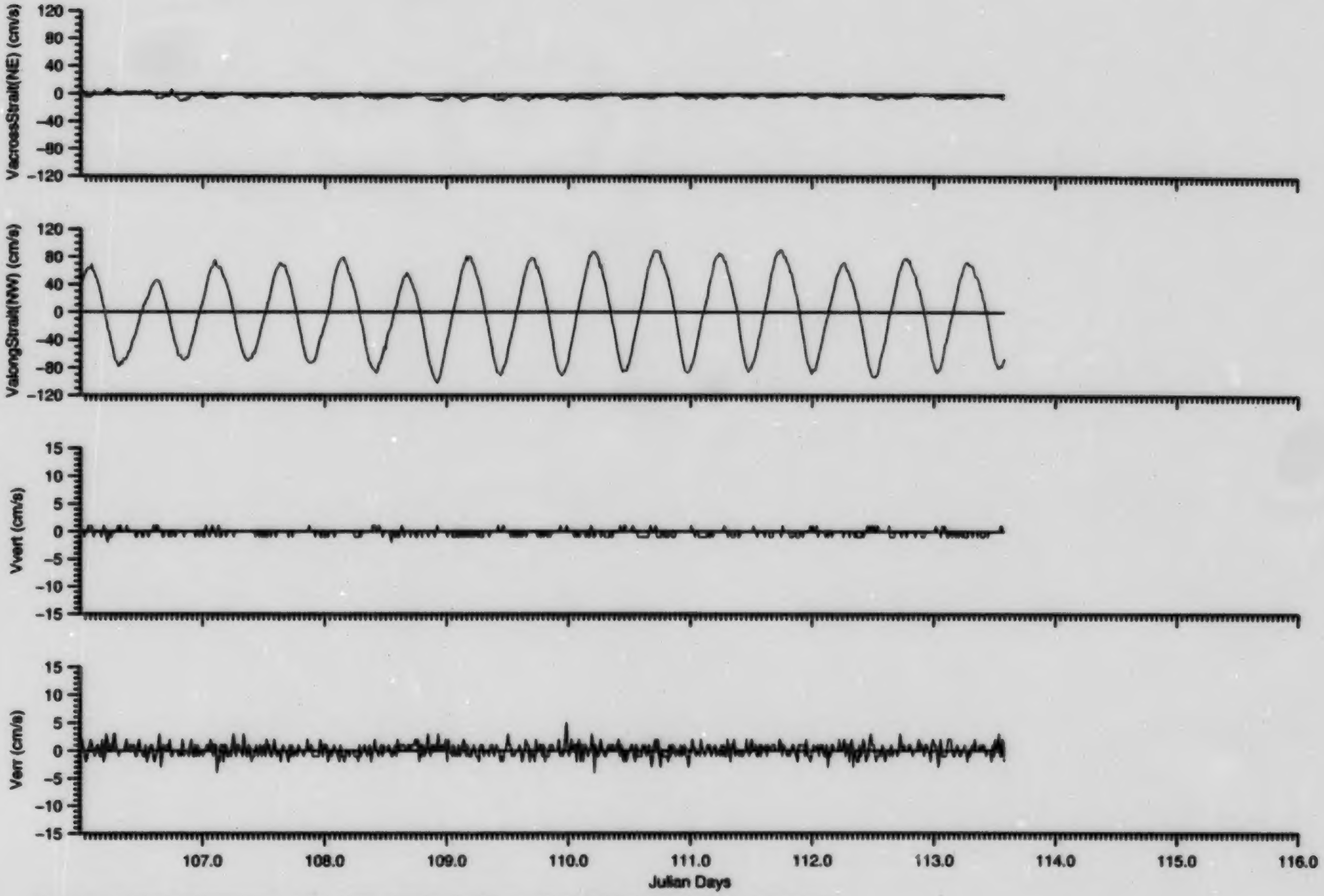

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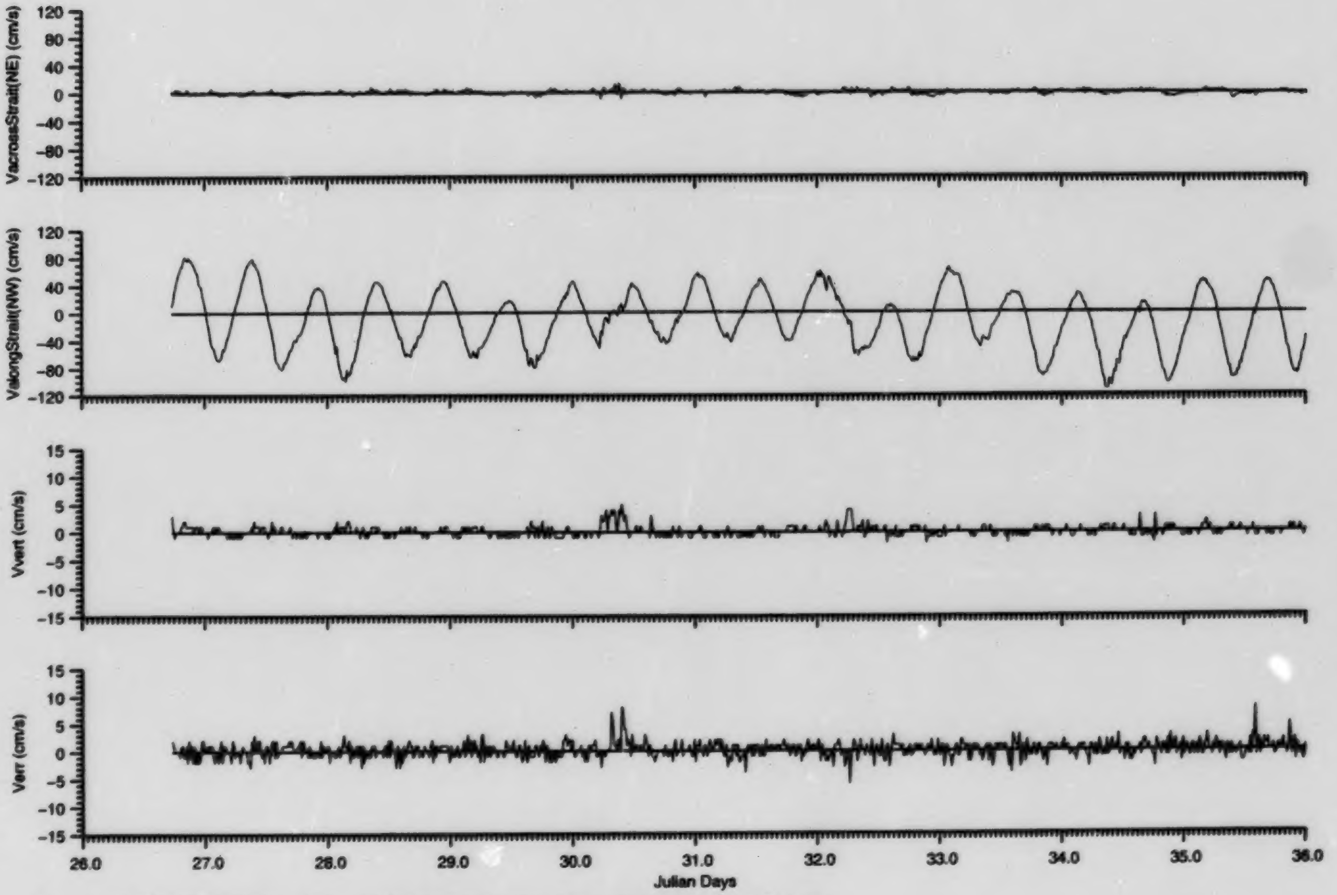

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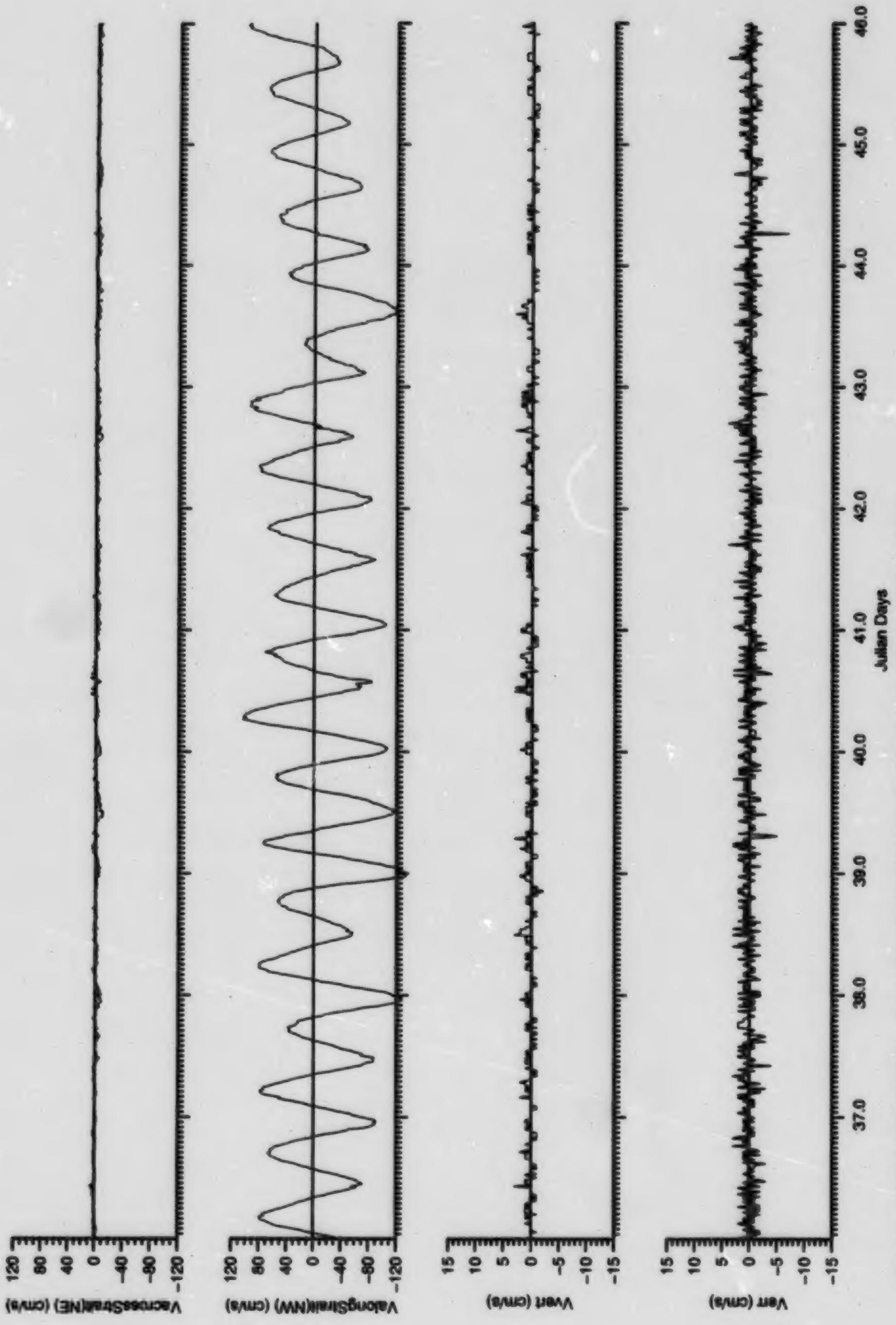

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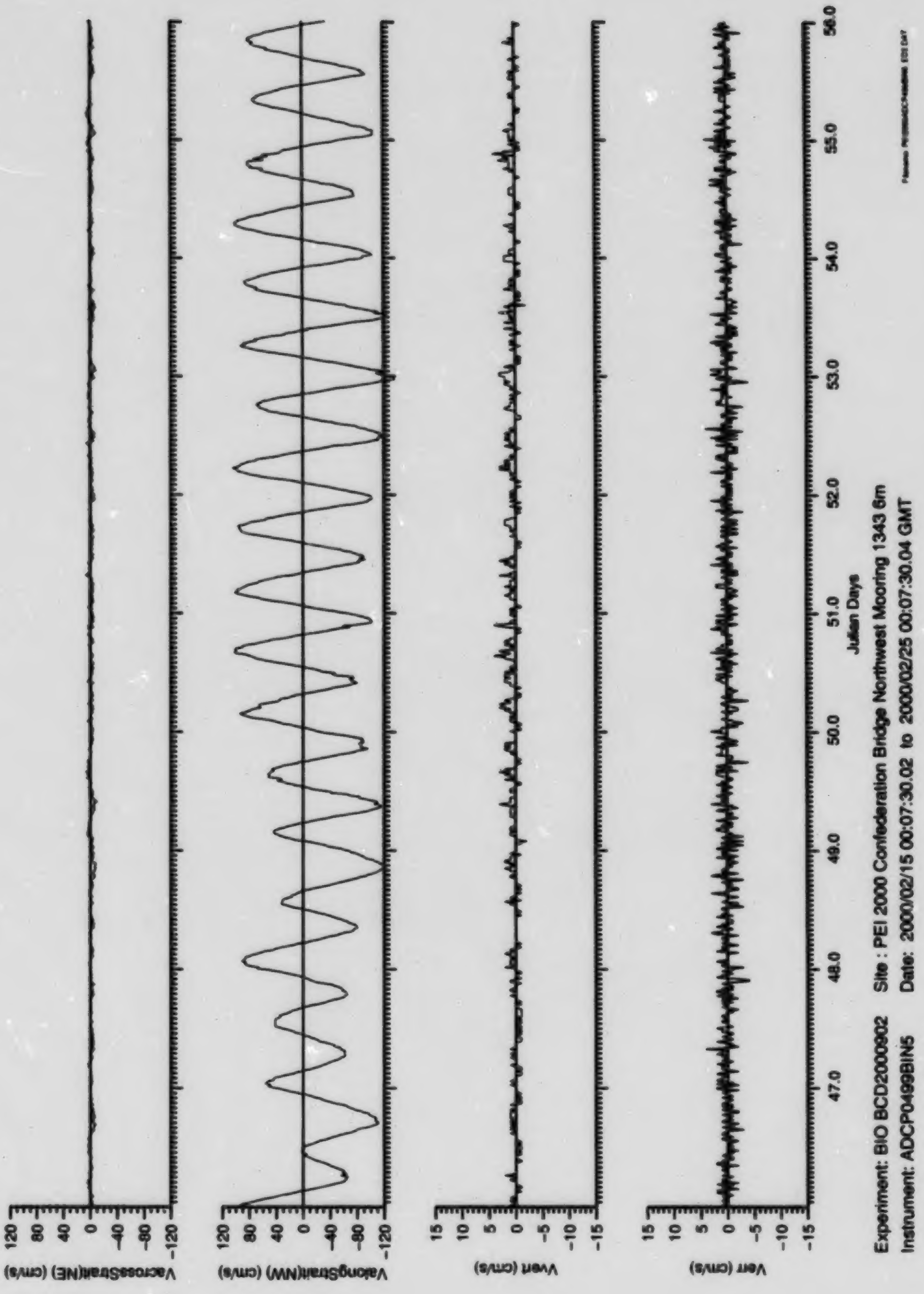

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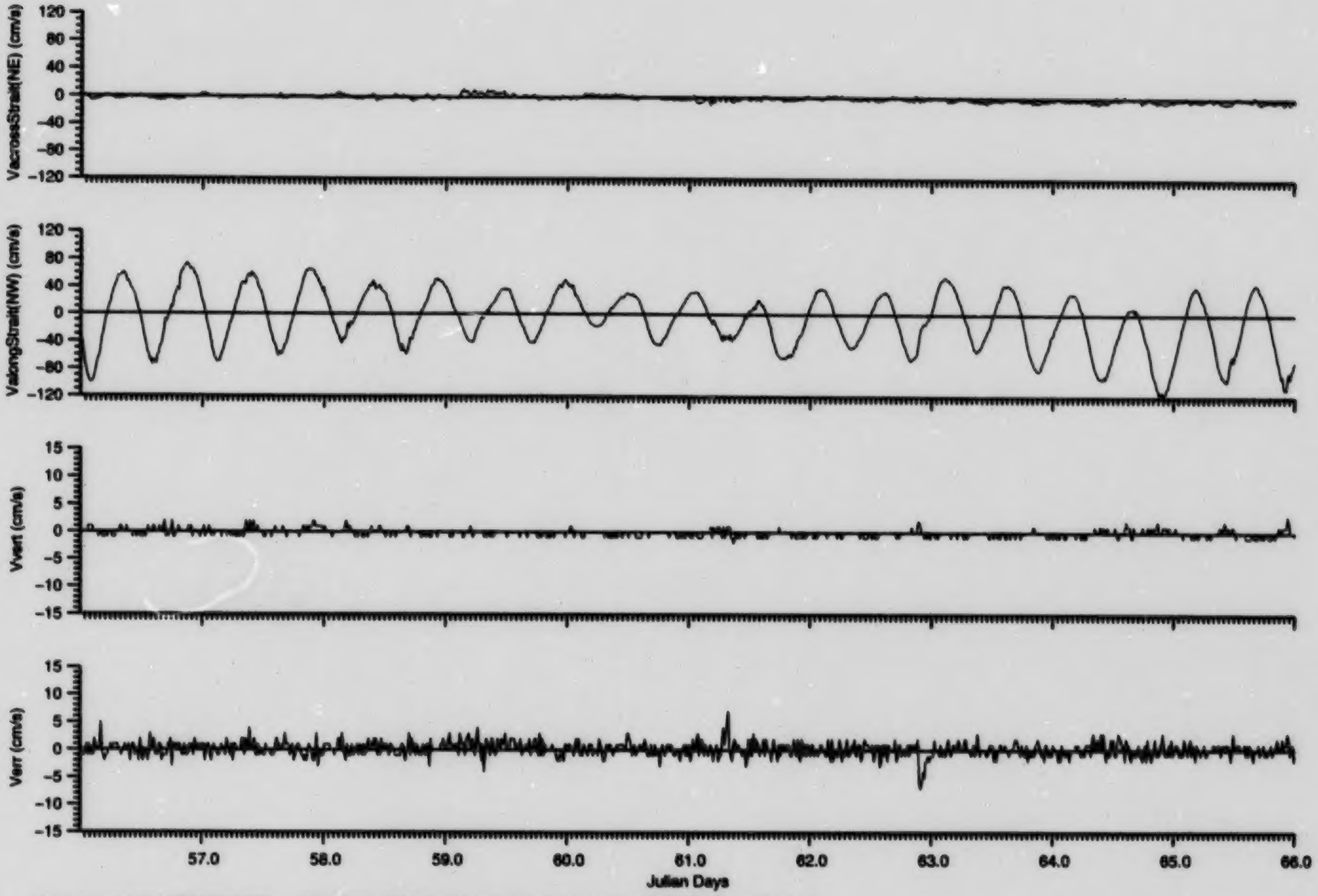

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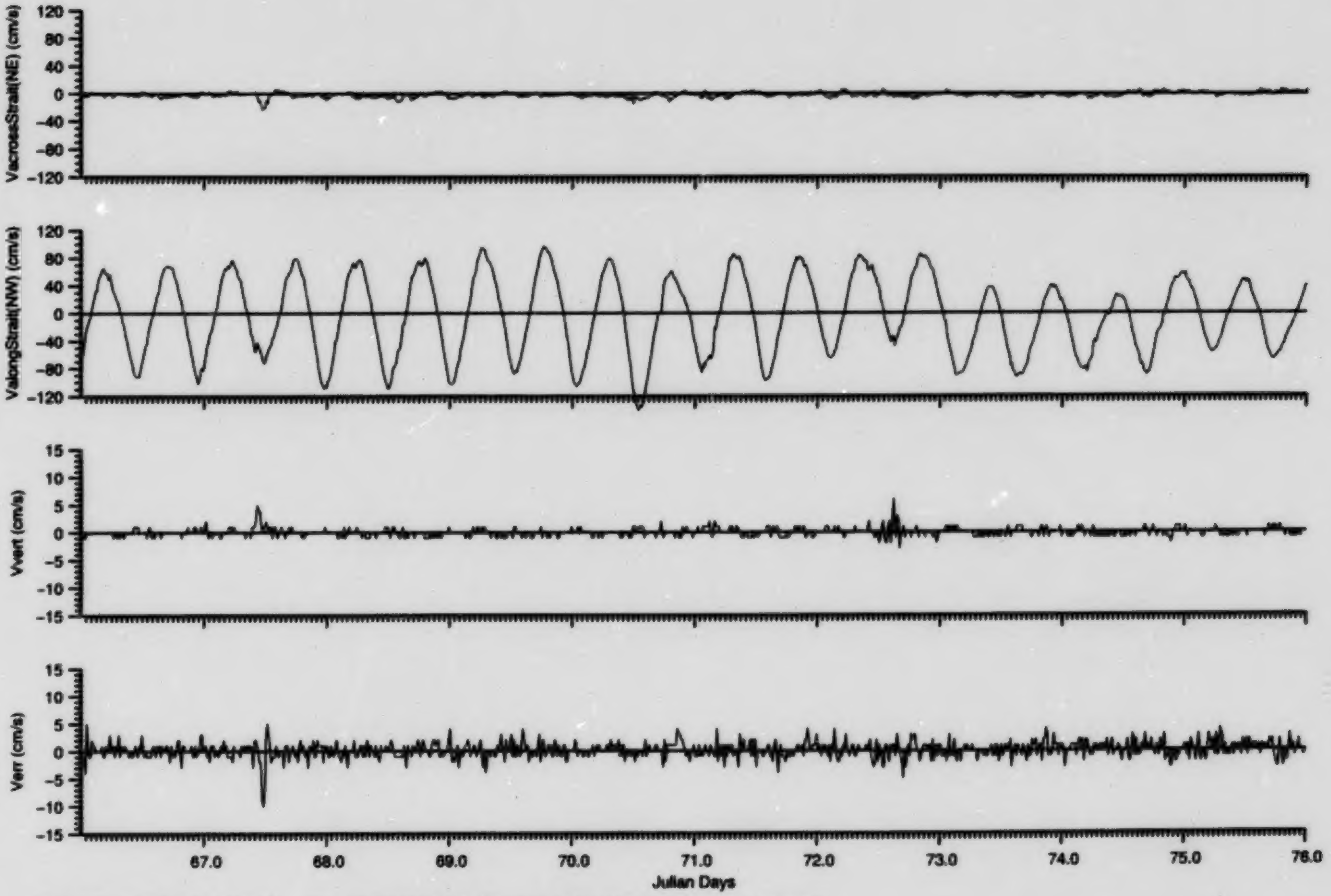

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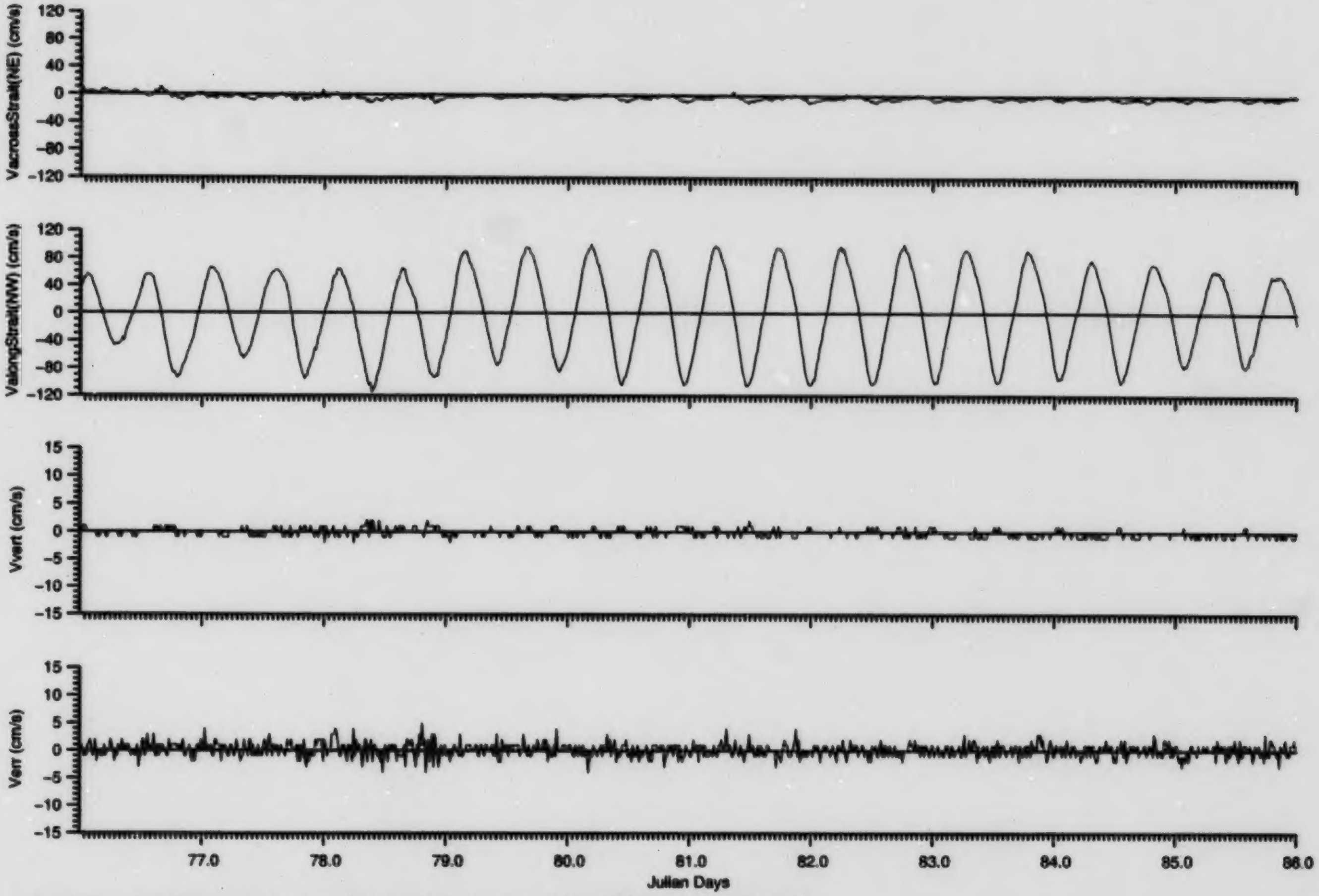

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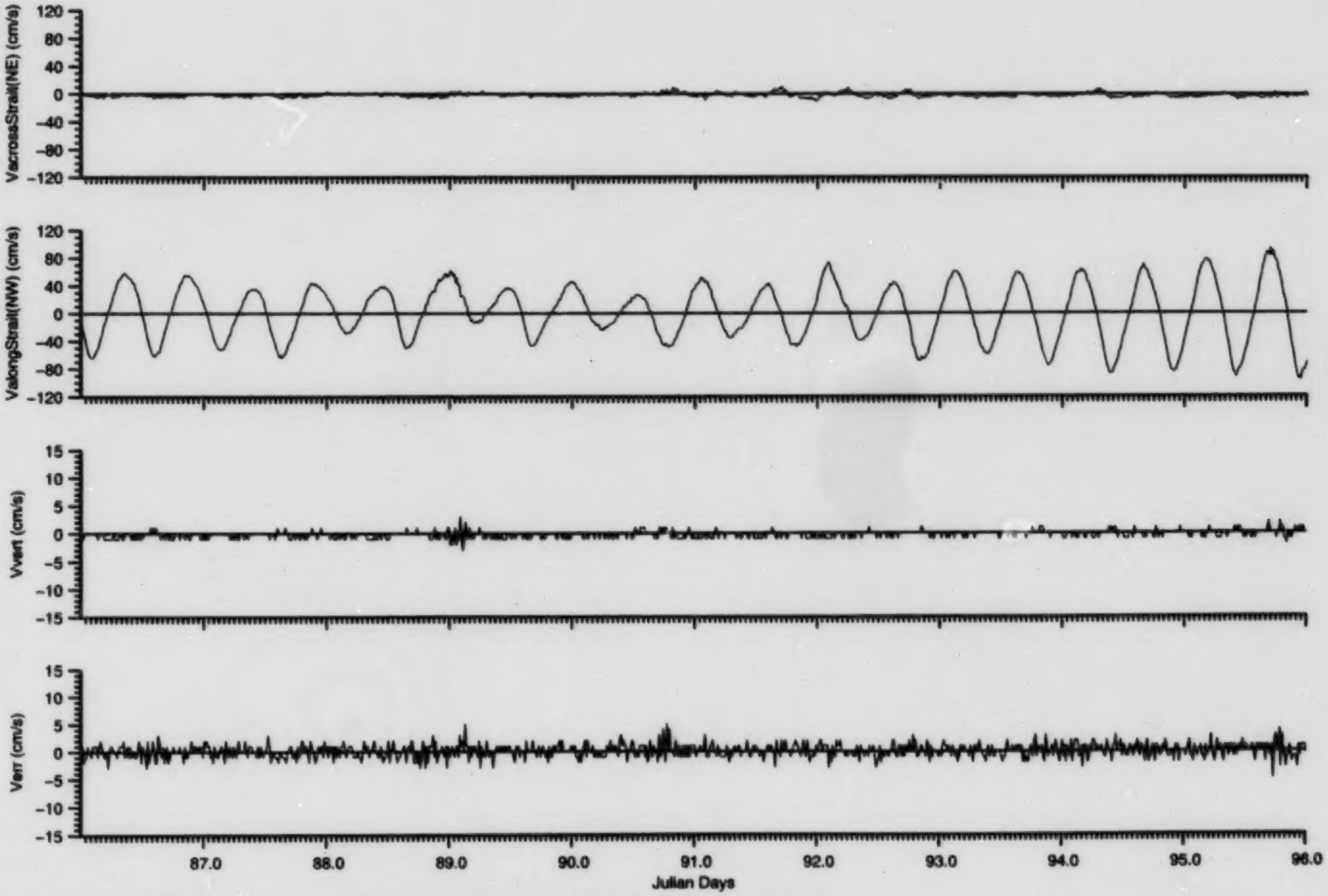

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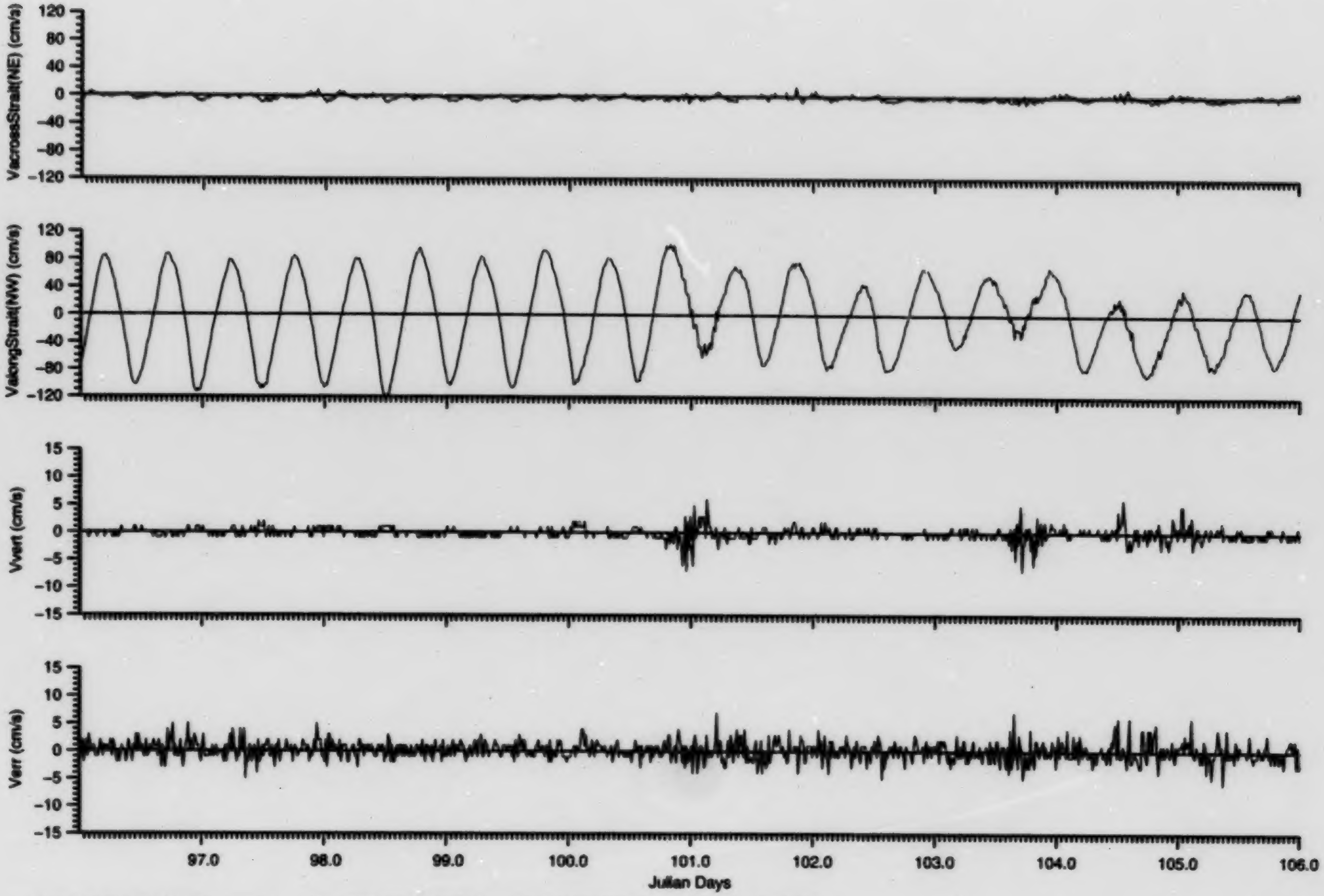

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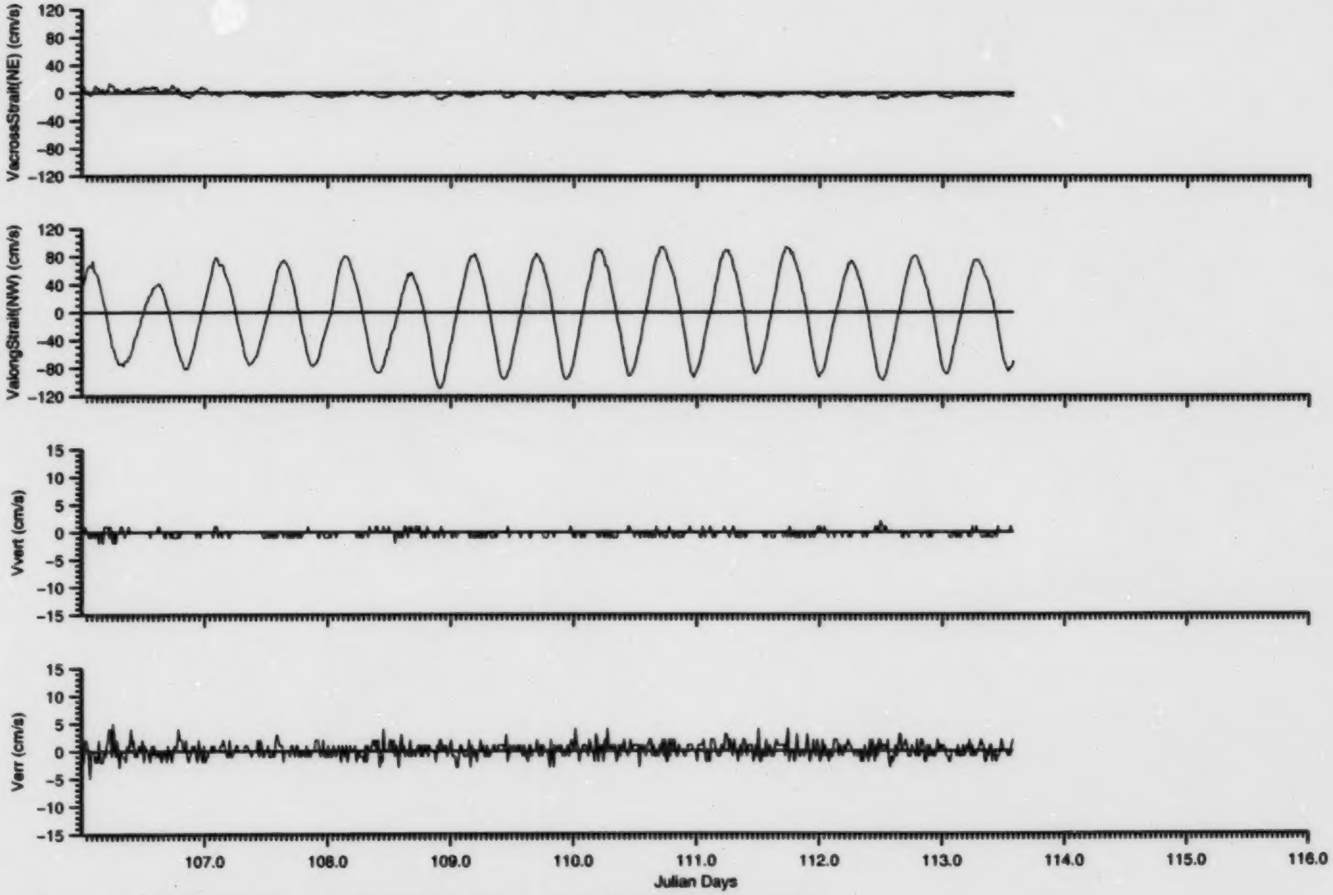
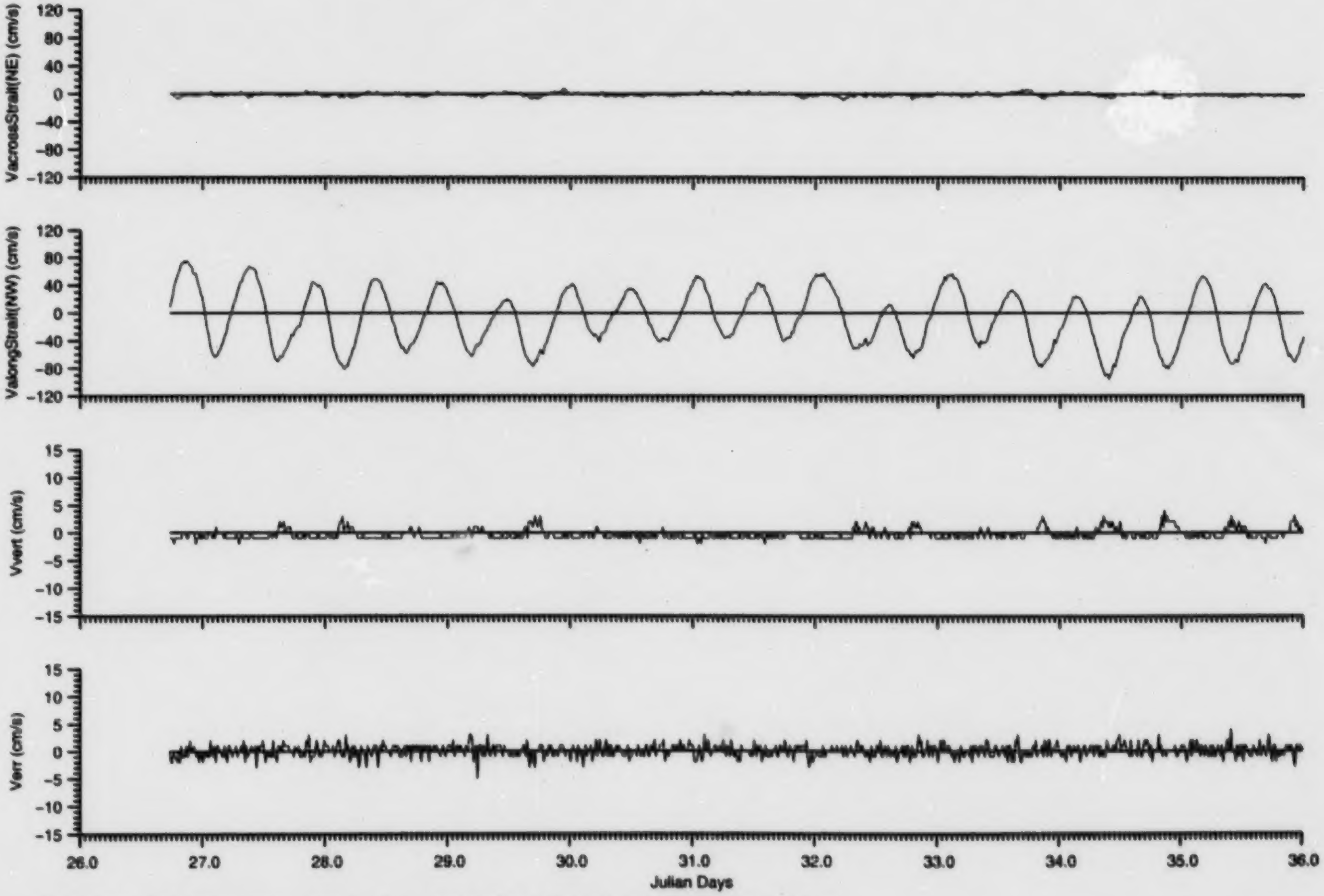


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest Mooring 1343 6m

Instrument: ADCP0499BIN5 Date: 2000/04/15 00:07:30.10 to 2000/04/22 13:52:30.11 GMT

3.2.2 ADCP 512 Southeast Mooring 1342, Jan 26 – Apr 22

ADCP 512 was deployed on a single mooring on the Southeast side of the Confederation Bridge on January 26th, at 46° 12.266'N, -63° 45.361'W at 18m in 20m of water with a 15 minute sample interval. Following are plots of 3 bins of the water column data Bin 1 at14m, Bin 3 at 10m and Bin 5 at 6 m. Note that similar to Bin 5 in ADCP 499, this sensor also had some elevated error and vertical velocities. This could be caused by deep ice ridges or waves interfering with the measurements in the near surface bin.



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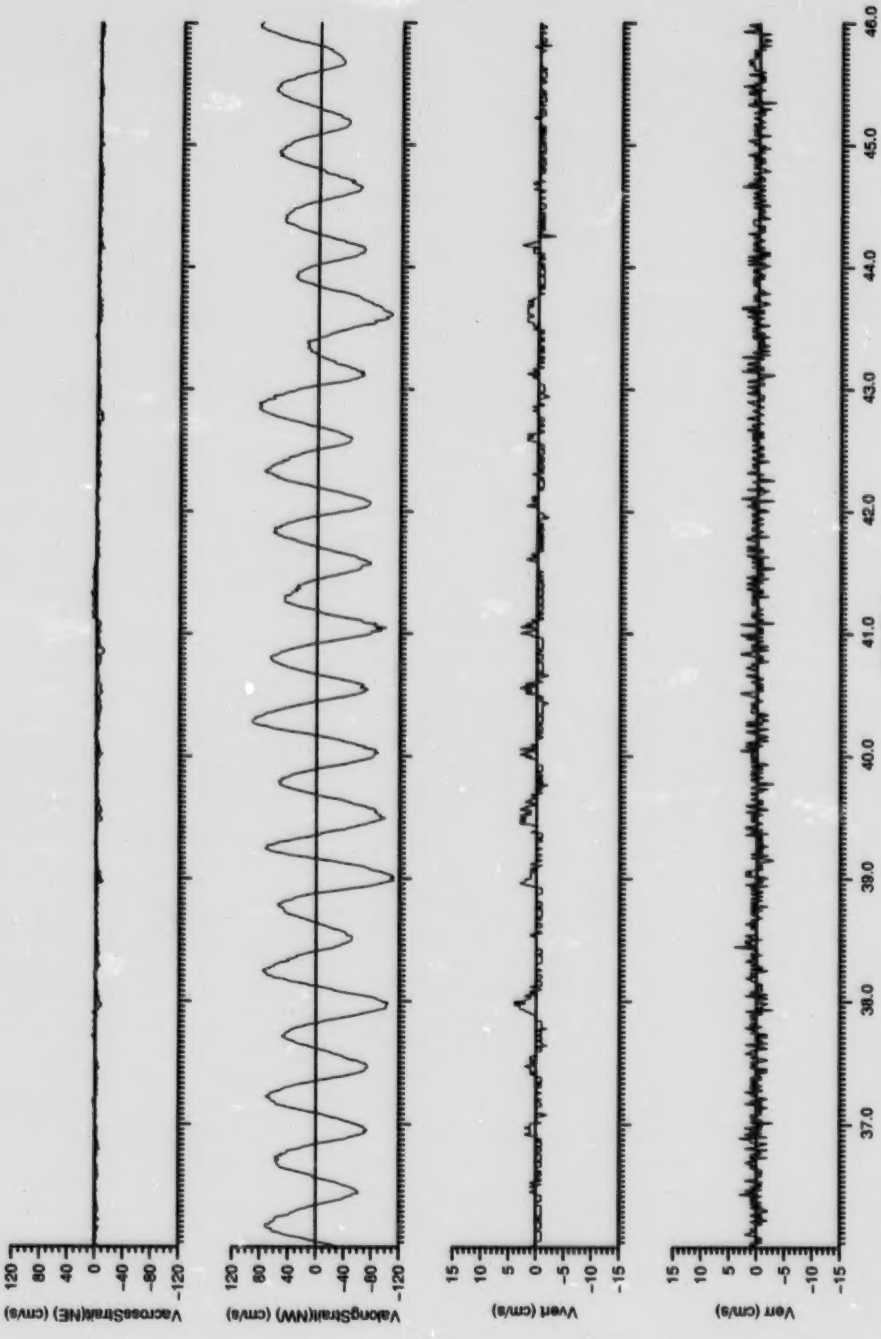

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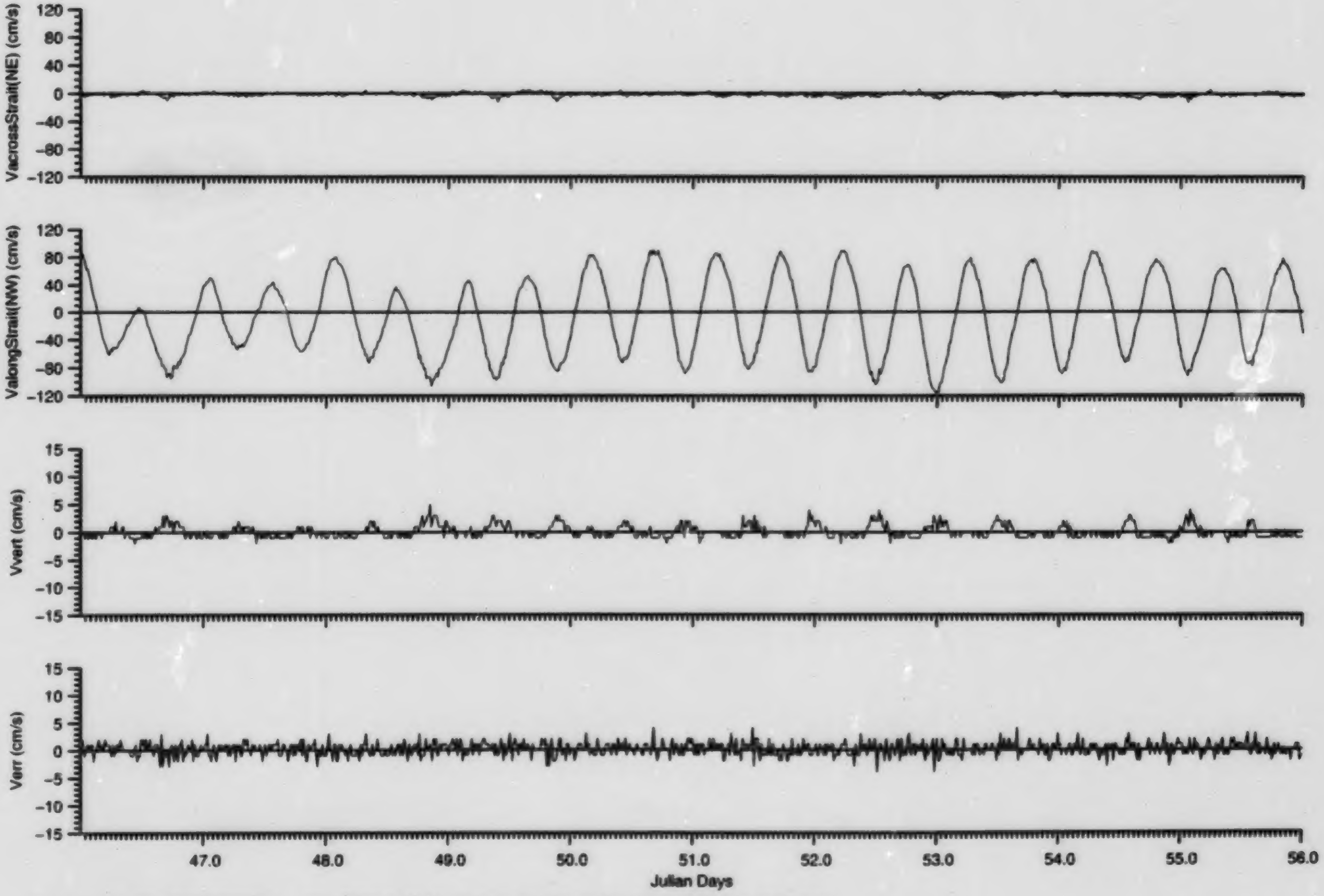

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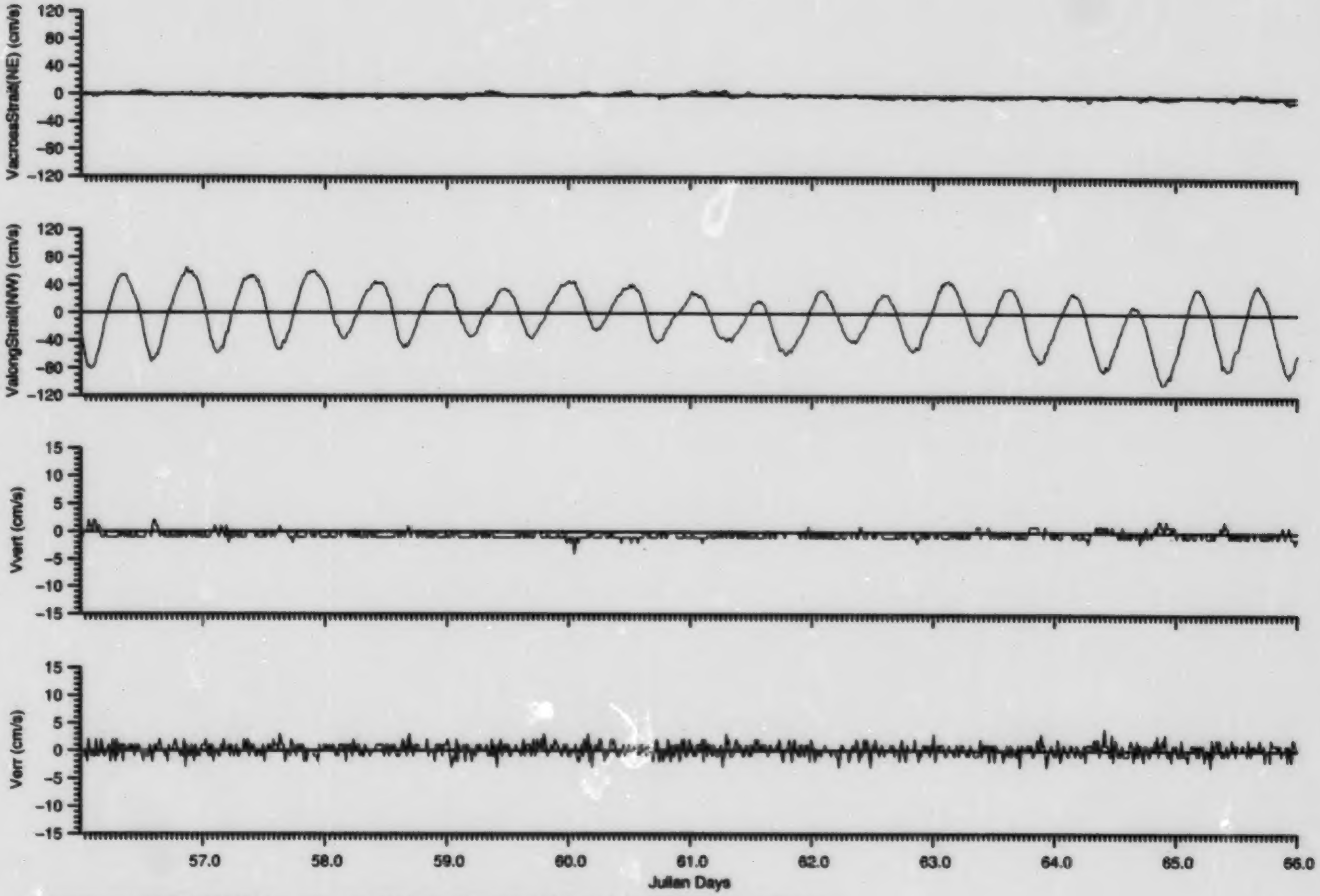
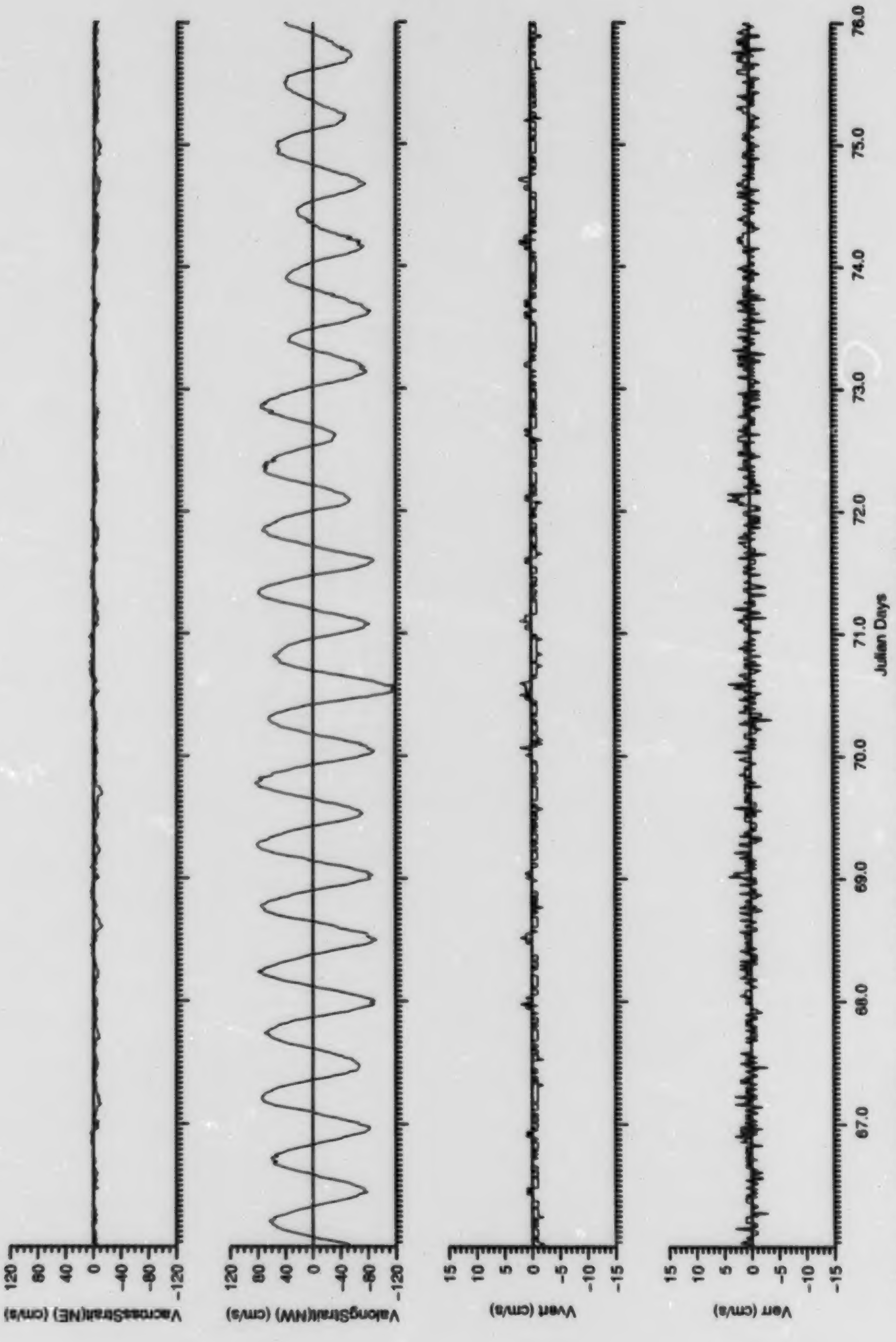


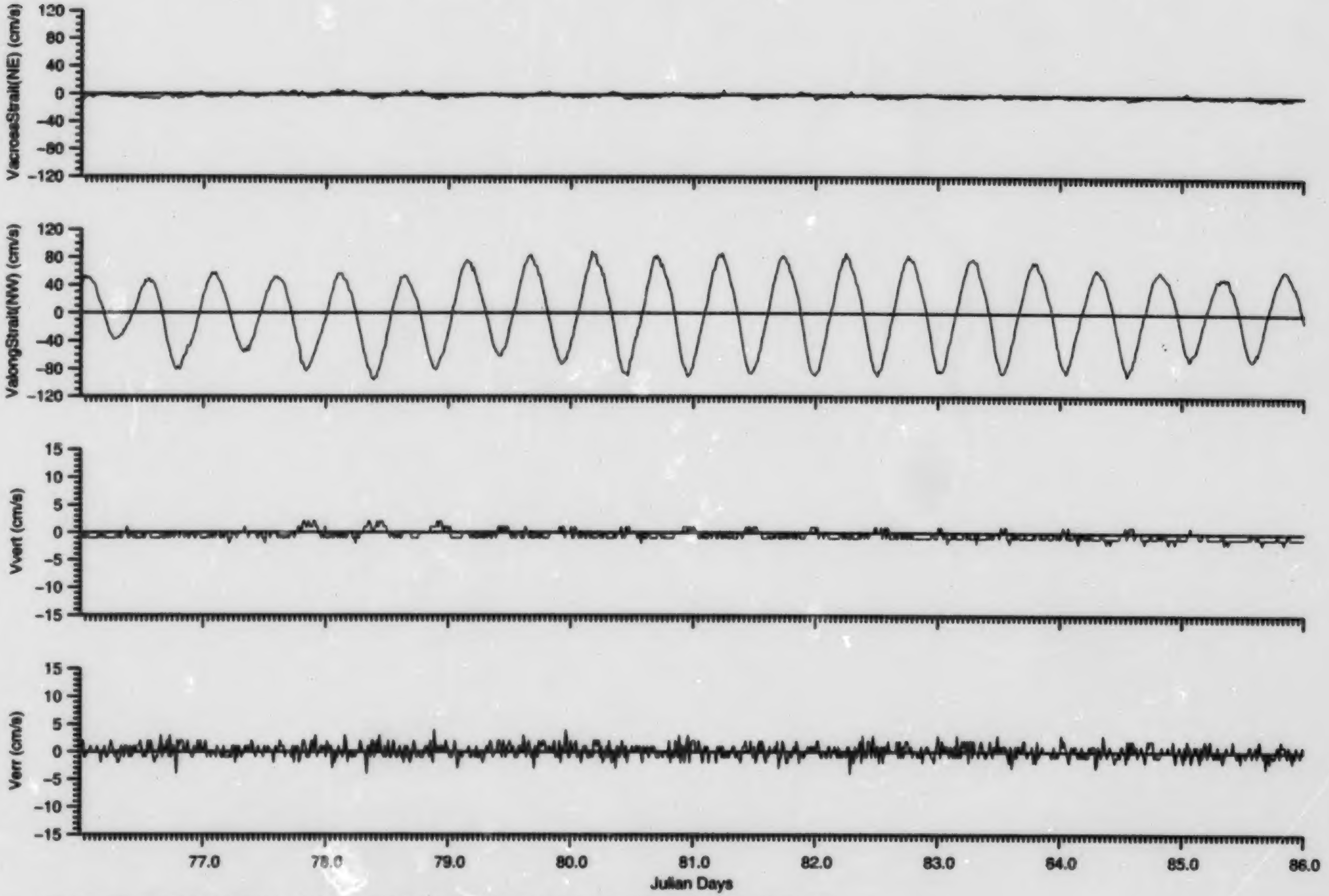
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 14m

Instrument: ADCP0512BIN1 Date: 2000/02/25 00:07:30.05 to 2000/03/06 00:07:30.07 GMT



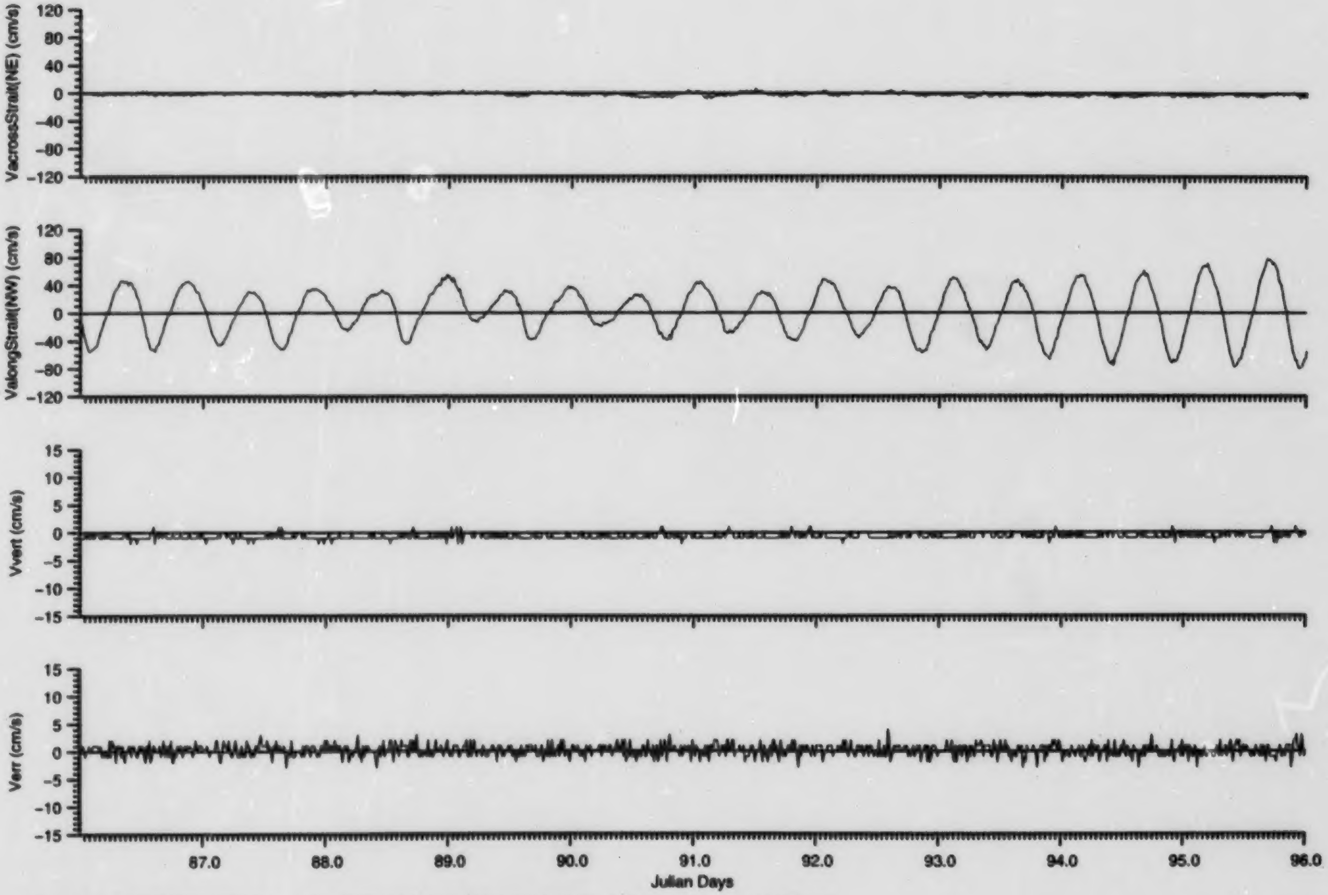
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 14m

Instrument: ADCP0512BIN1 Date: 2000/03/06 00:07:30.07 to 2000/03/16 00:07:30.08 GMT



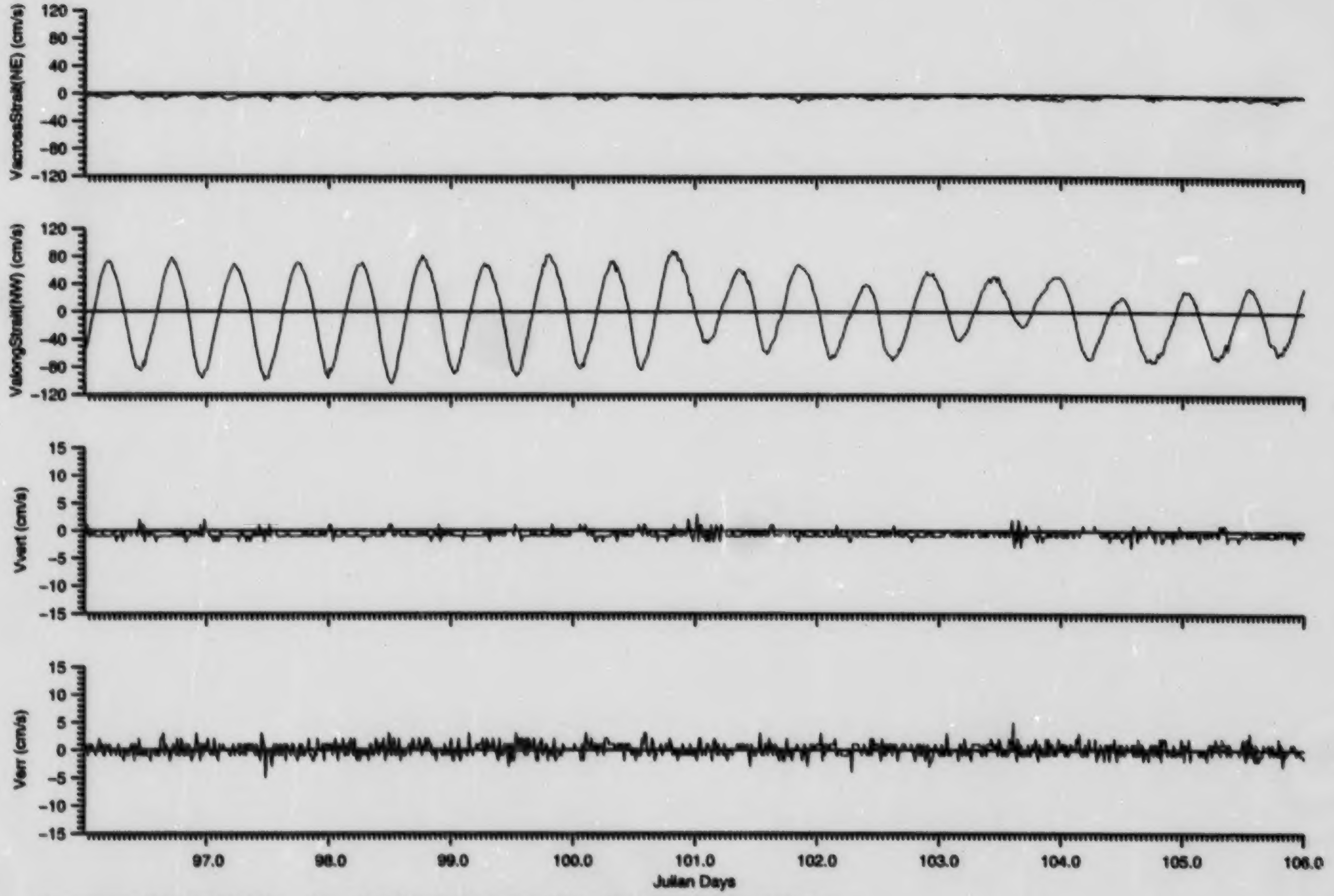
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 14m
Instrument: ADCP0512BIN1 Date: 2000/03/16 00:07:30.08 to 2000/03/26 00:07:30.10 GMT

[illegible]



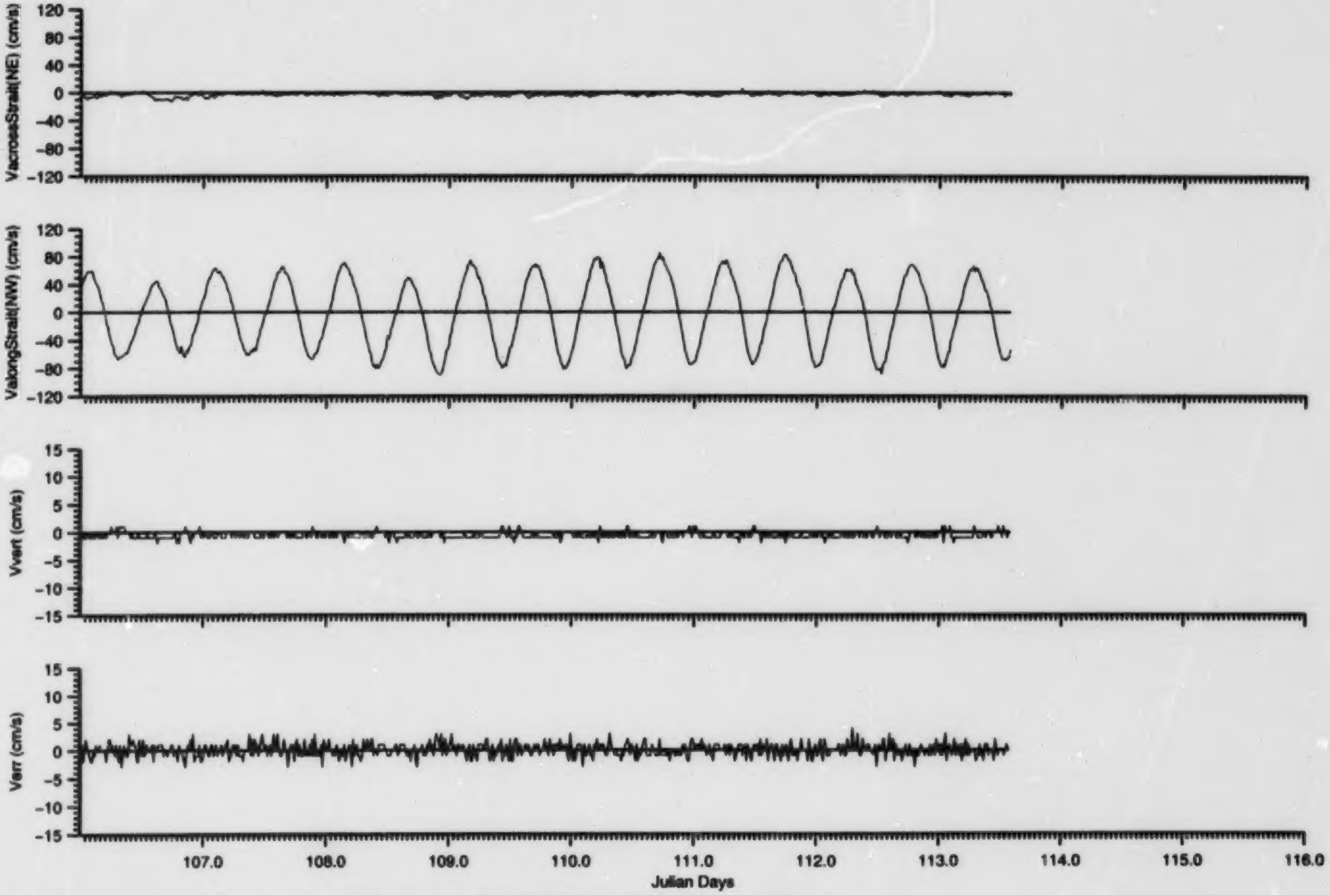
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 14m

Instrument: ADCP0512BIN1 Date: 2000/03/26 00:07:30.10 to 2000/04/05 00:07:30.12 GMT

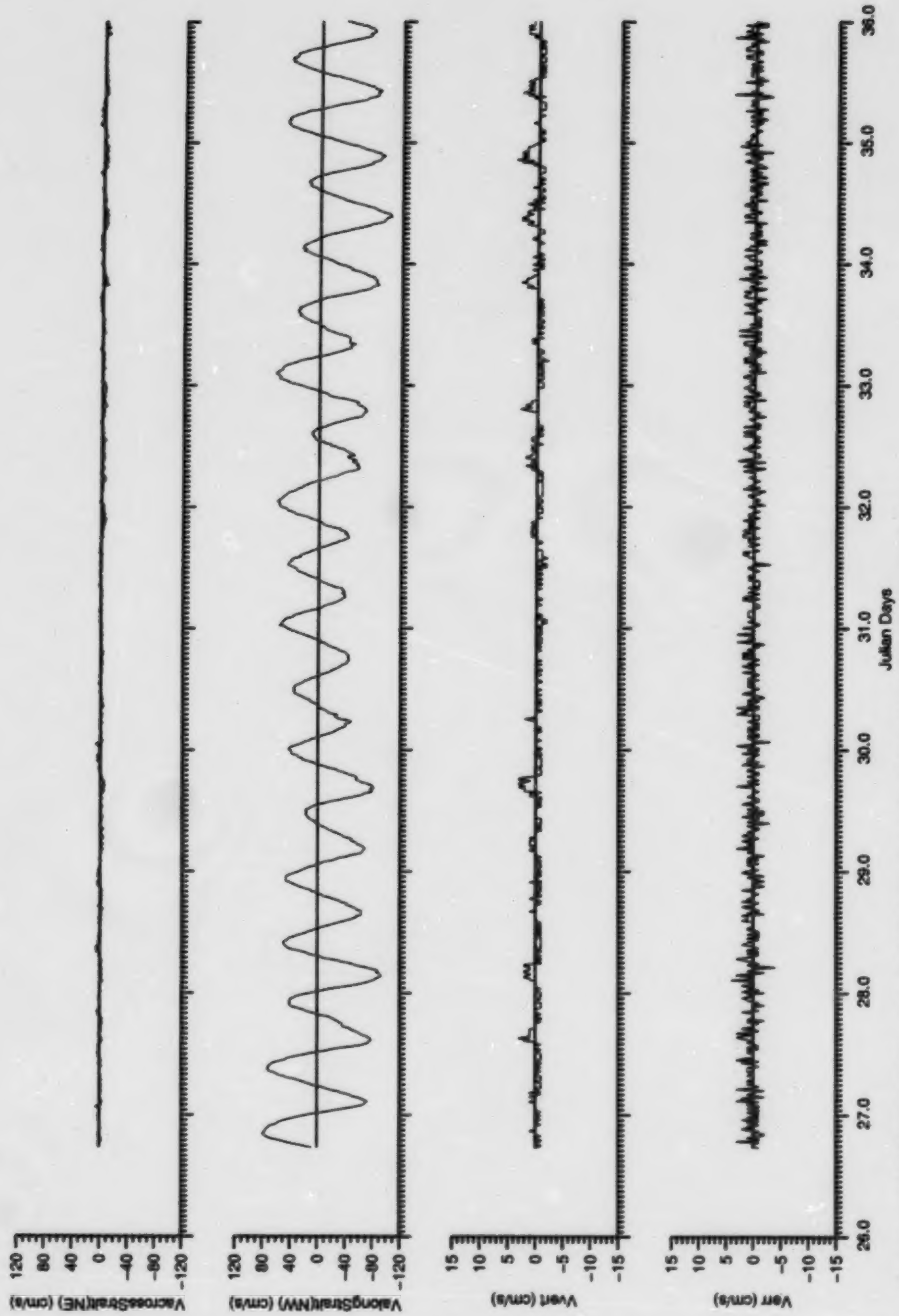


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 14m

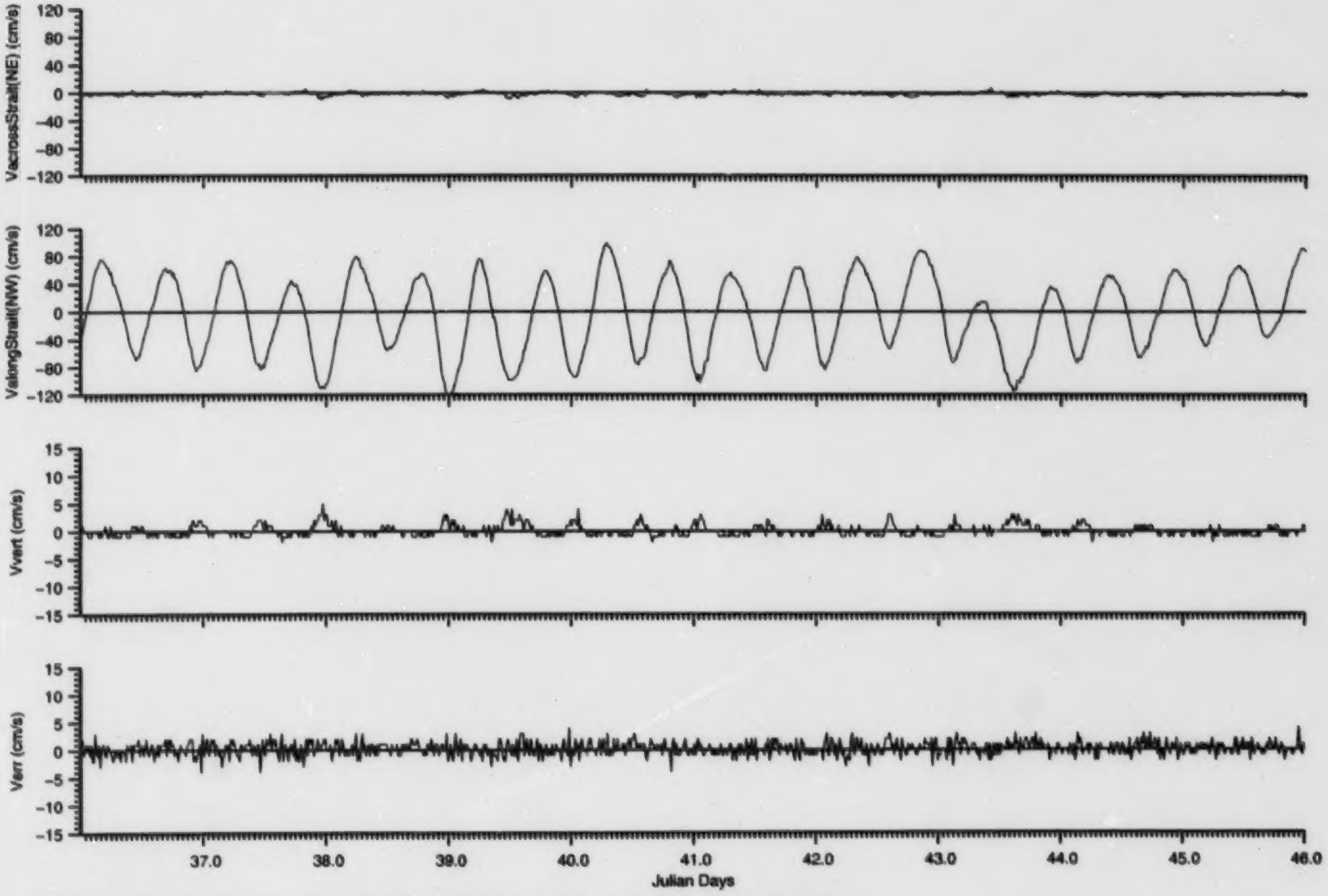
Instrument: ADCP0512BIN1 Date: 2000/04/05 00:07:30.12 to 2000/04/15 00:07:30.13 GMT



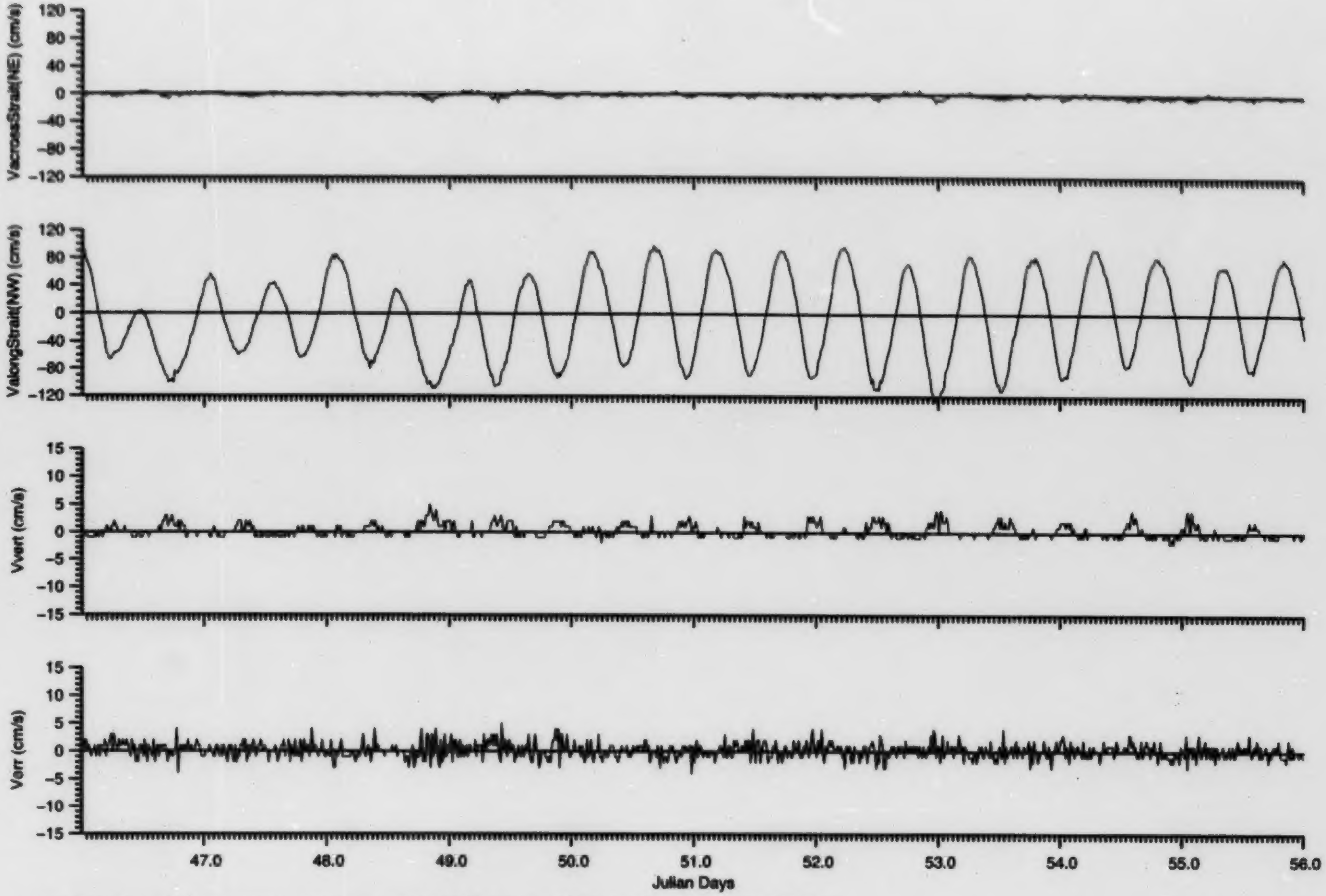
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 14m
Instrument: ADCP0512BIN1 Date: 2000/04/15 00:07:30.13 to 2000/04/22 13:52:30.15 GMT



Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m
Instrument: ADCP0512BIN3 Date: 2000/01/26 17:37:30.00 to 2000/02/05 00:07:30.02 GMT

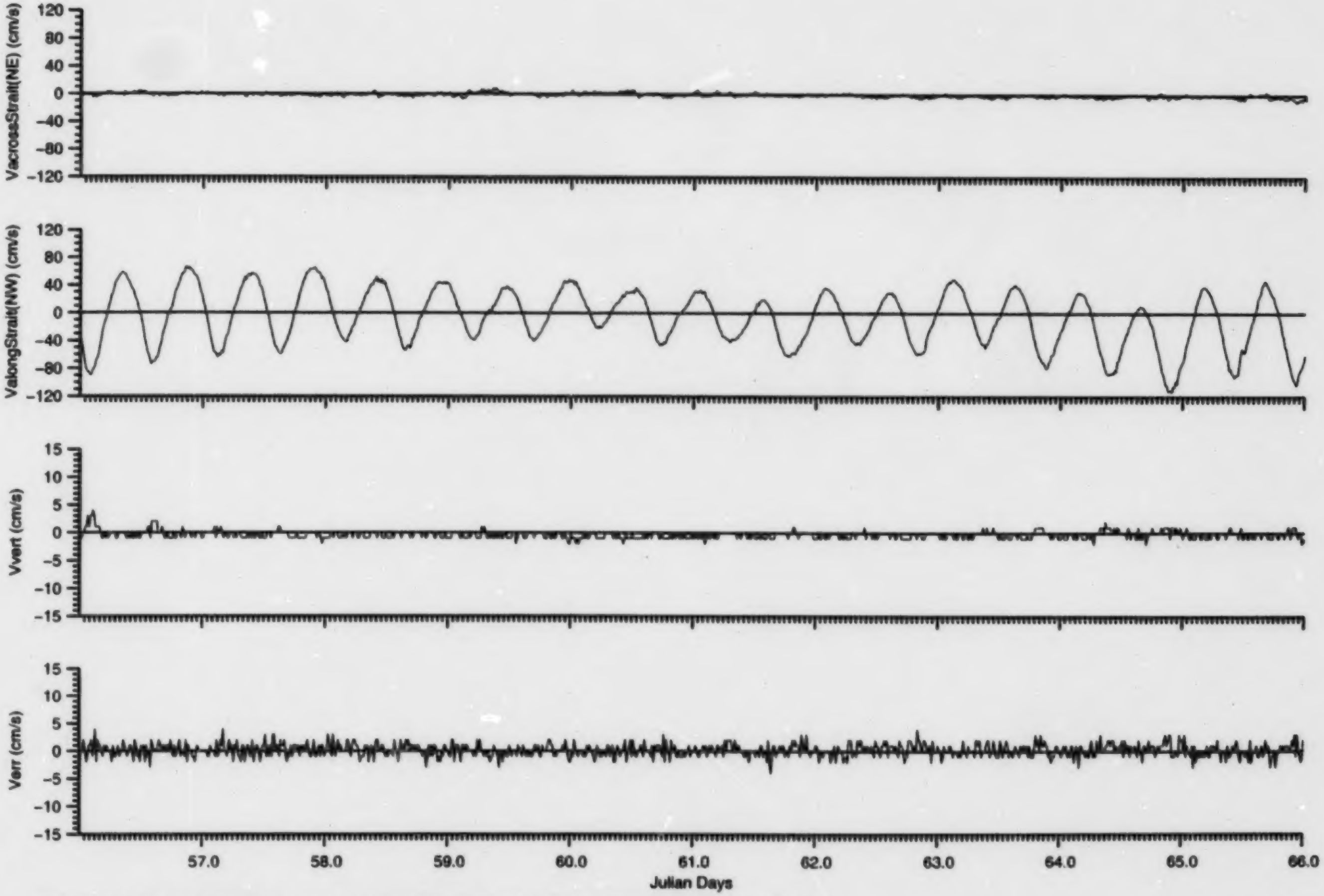


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m
Instrument: ADCP0512BIN3 Date: 2000/02/05 00:07:30.02 to 2000/02/15 00:07:30.03 GMT

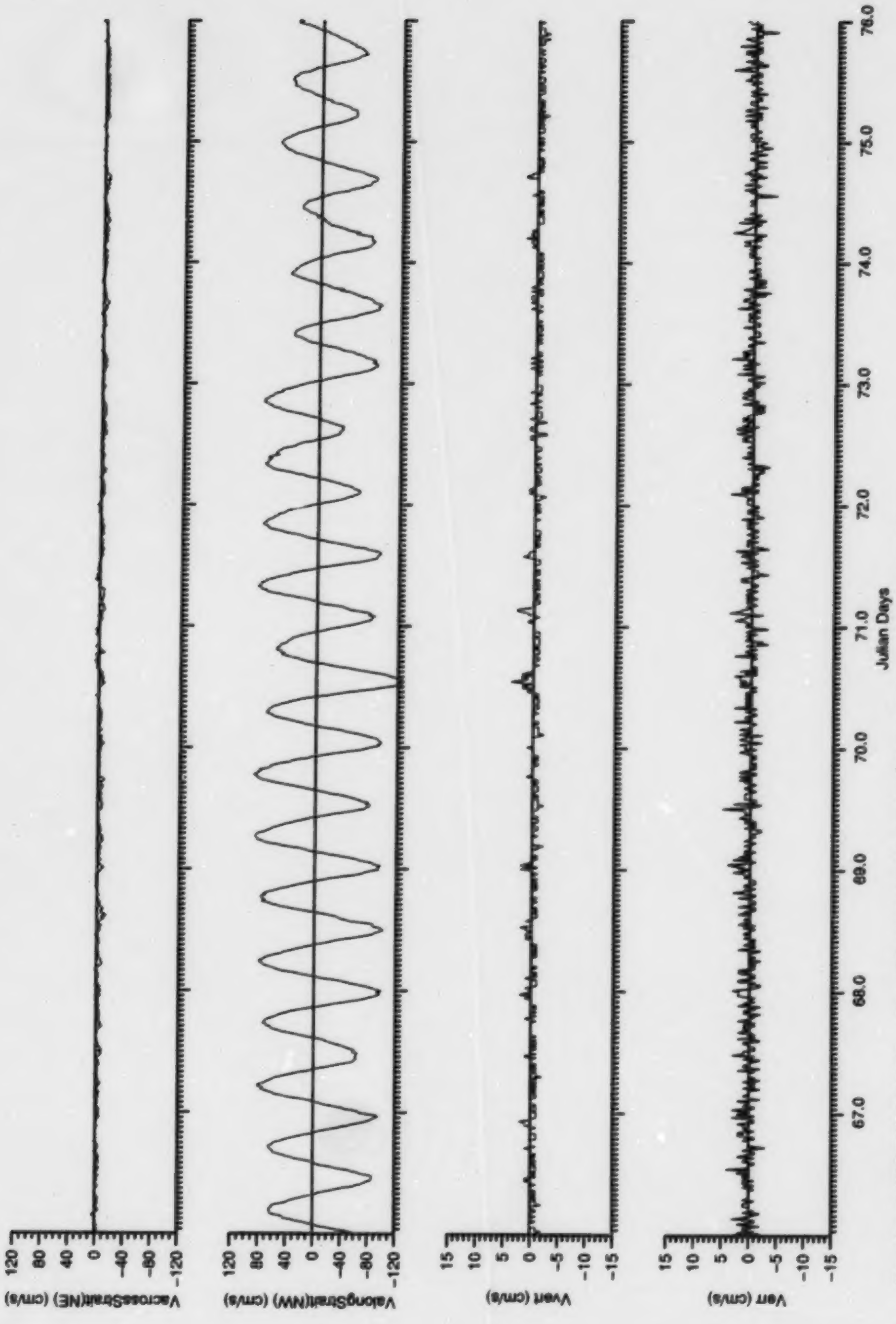


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m

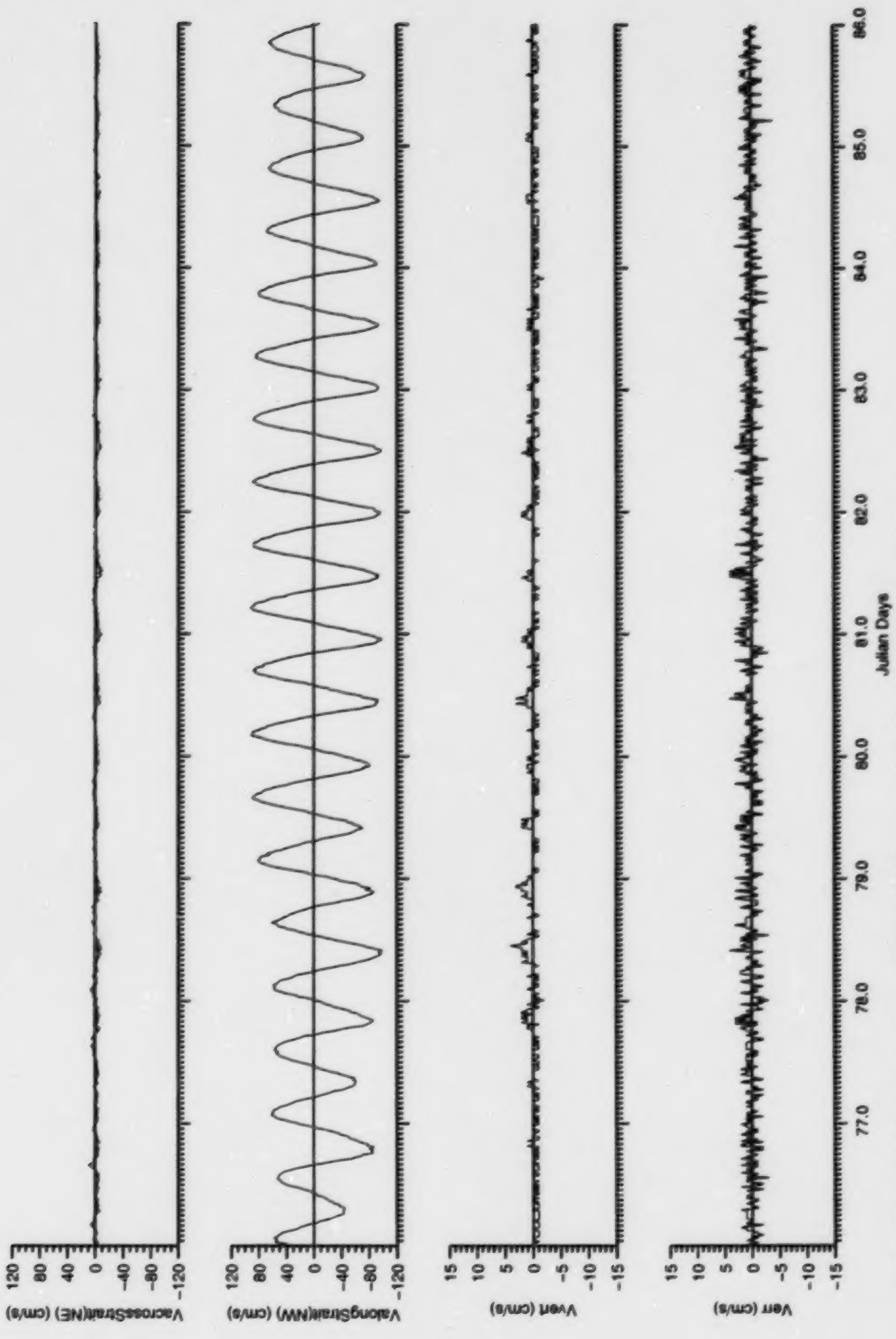
Instrument: ADCP0512BIN3 Date: 2000/02/15 00:07:30.03 to 2000/02/25 00:07:30.05 GMT



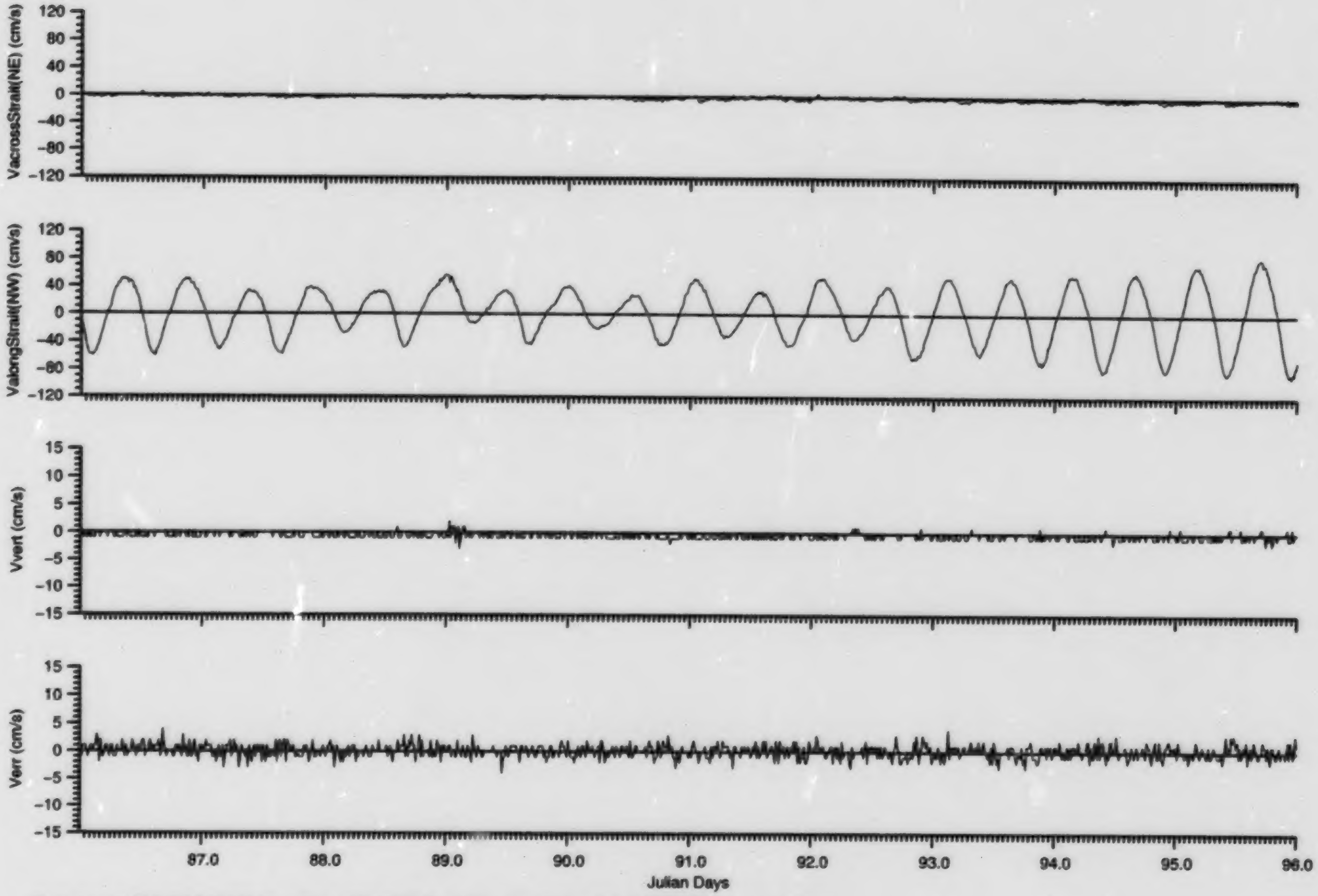
Experiment: BIO BCD2000902   Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m
Instrument: ADCP0512BIN3   Date: 2000/02/25 00:07:30.05 to 2000/03/06 00:07:30.07 GMT



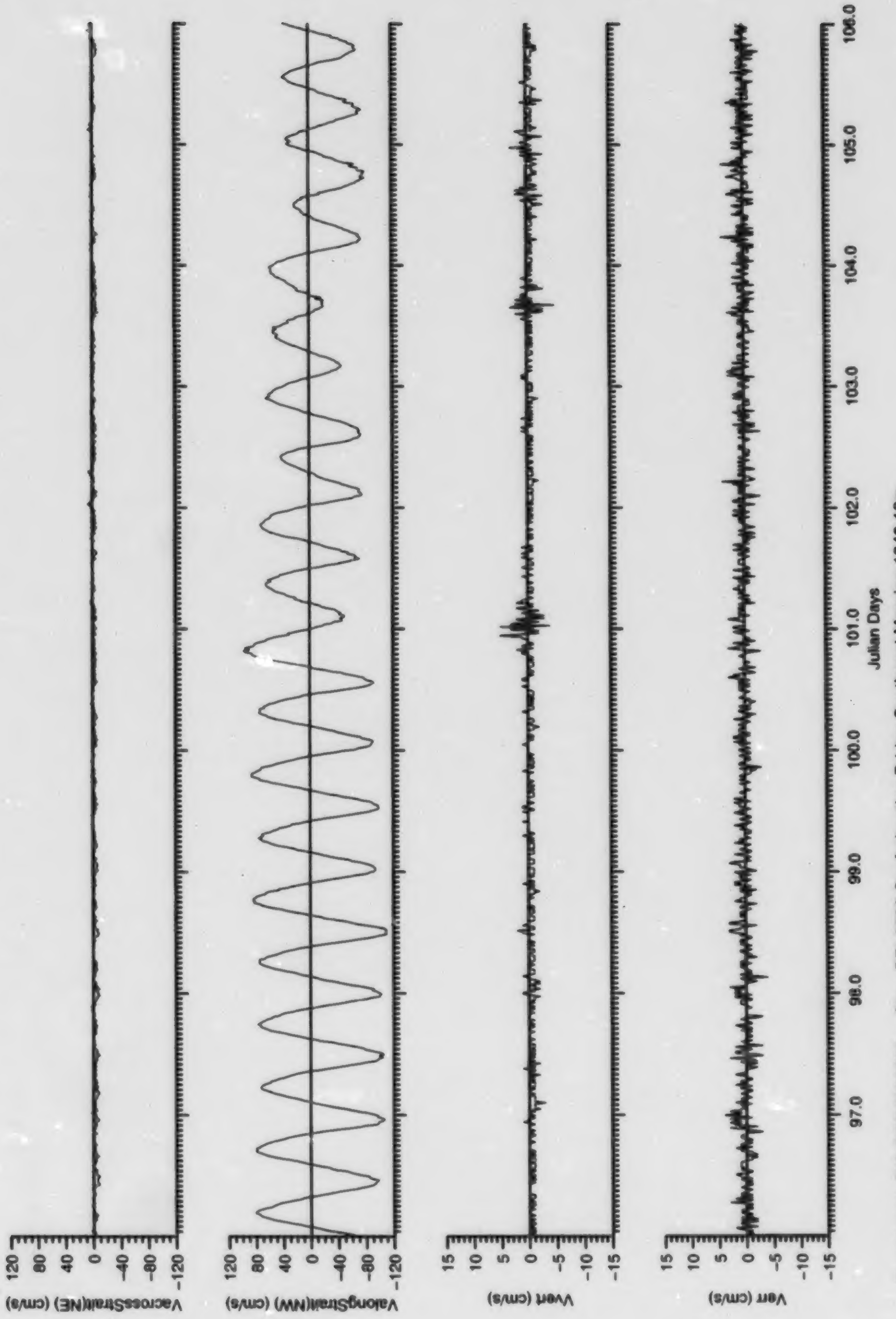
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m
Instrument: ADCP0512BIN3 Date: 2000/03/06 00:07:30.07 to 2000/03/16 00:07:30.08 GMT



Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m
Instrument: ADCP0512BIN3 Date: 2000/03/16 00:07:30.08 to 2000/03/26 00:07:30.10 GMT

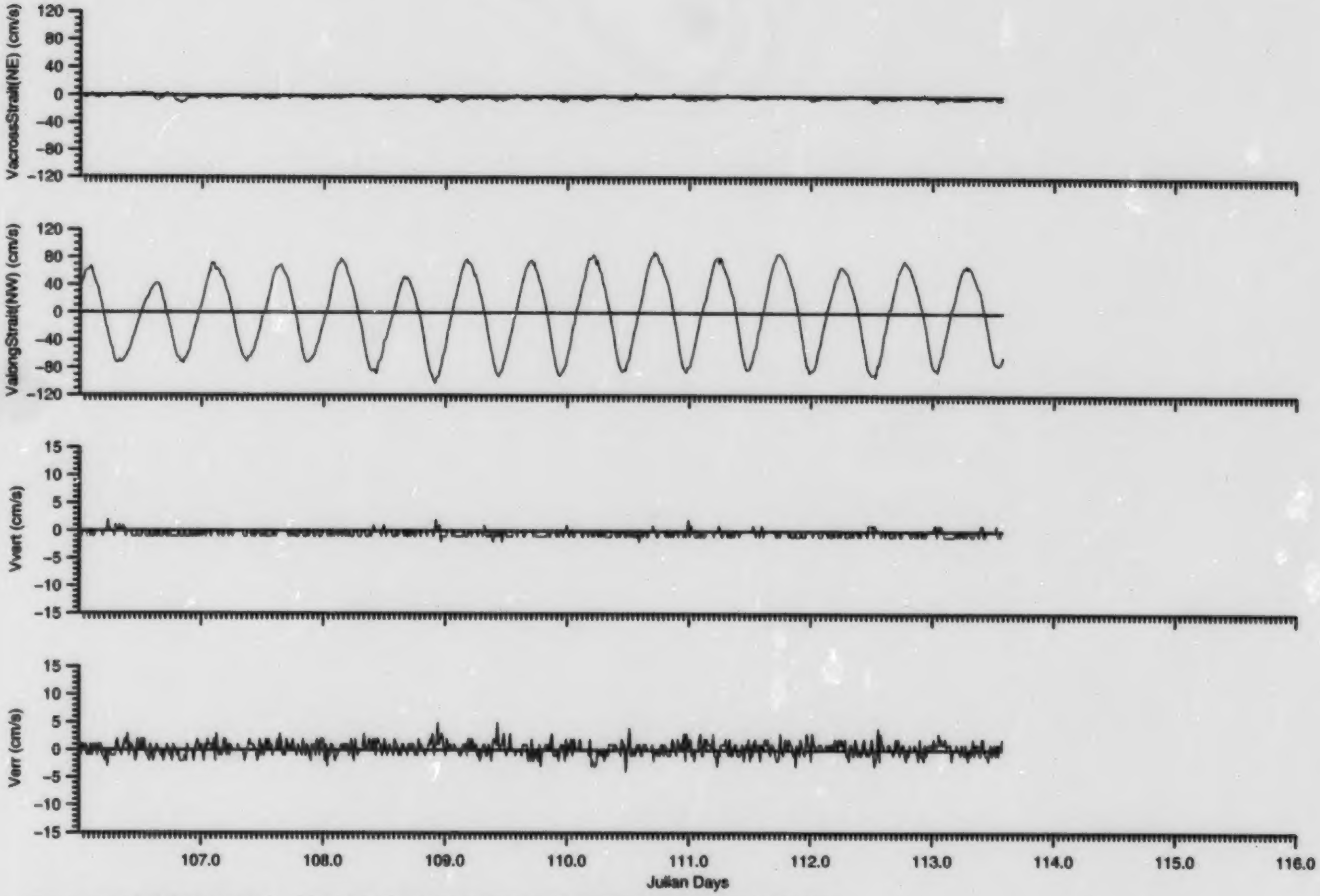


Experiment: BIO BCD2000902　Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m
Instrument: ADCP0512BIN3　Date: 2000/03/26 00:07:30.10 to 2000/04/05 00:07:30.12 GMT



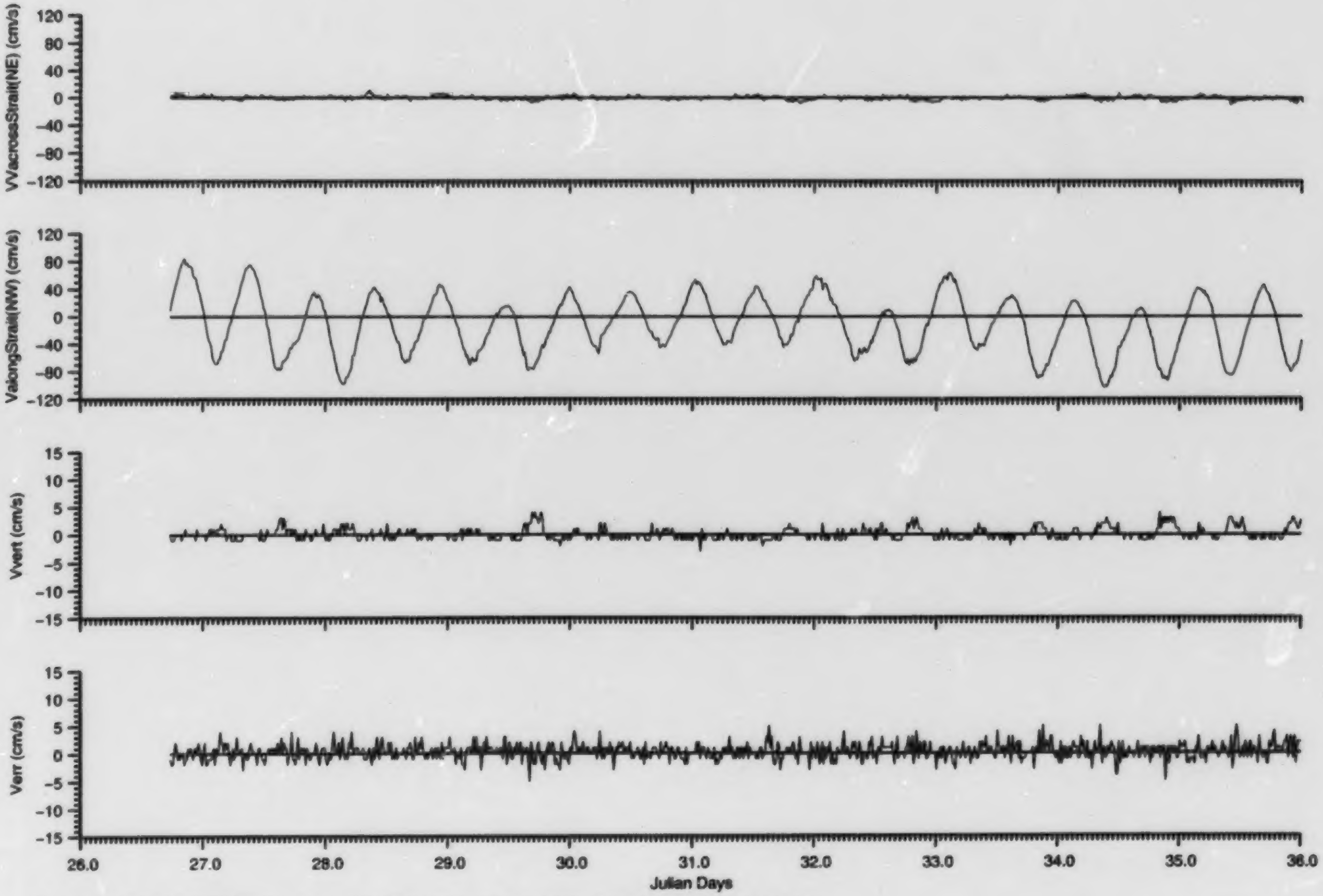
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m

Instrument: ADCP0512BIN3 Date: 2000/04/05 00:07:30.12 to 2000/04/15 00:07:30.13 GMT



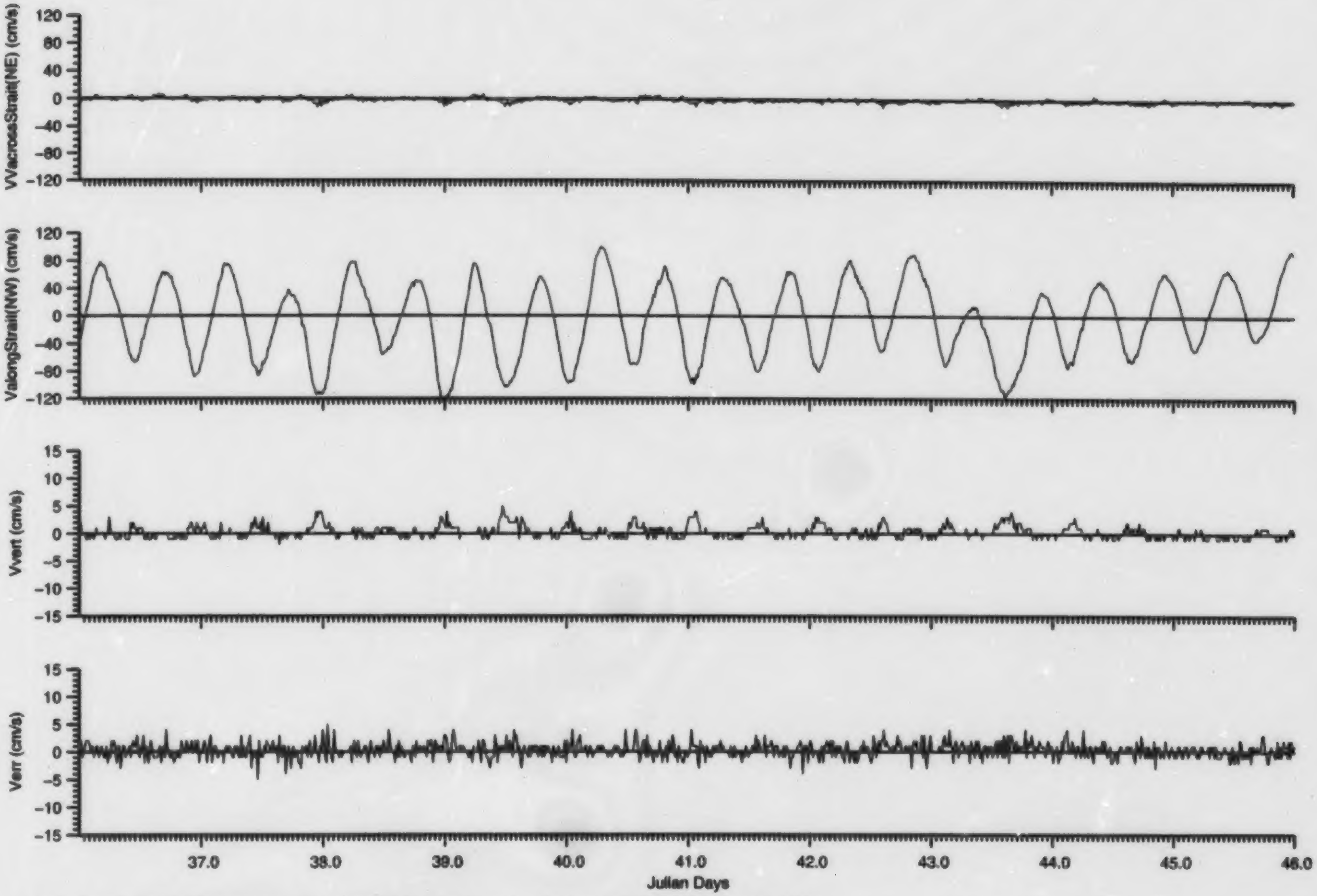
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 10m

Instrument: ADCP0512BIN3 Date: 2000/04/15 00:07:30.13 to 2000/04/22 13:52:30.15 GMT



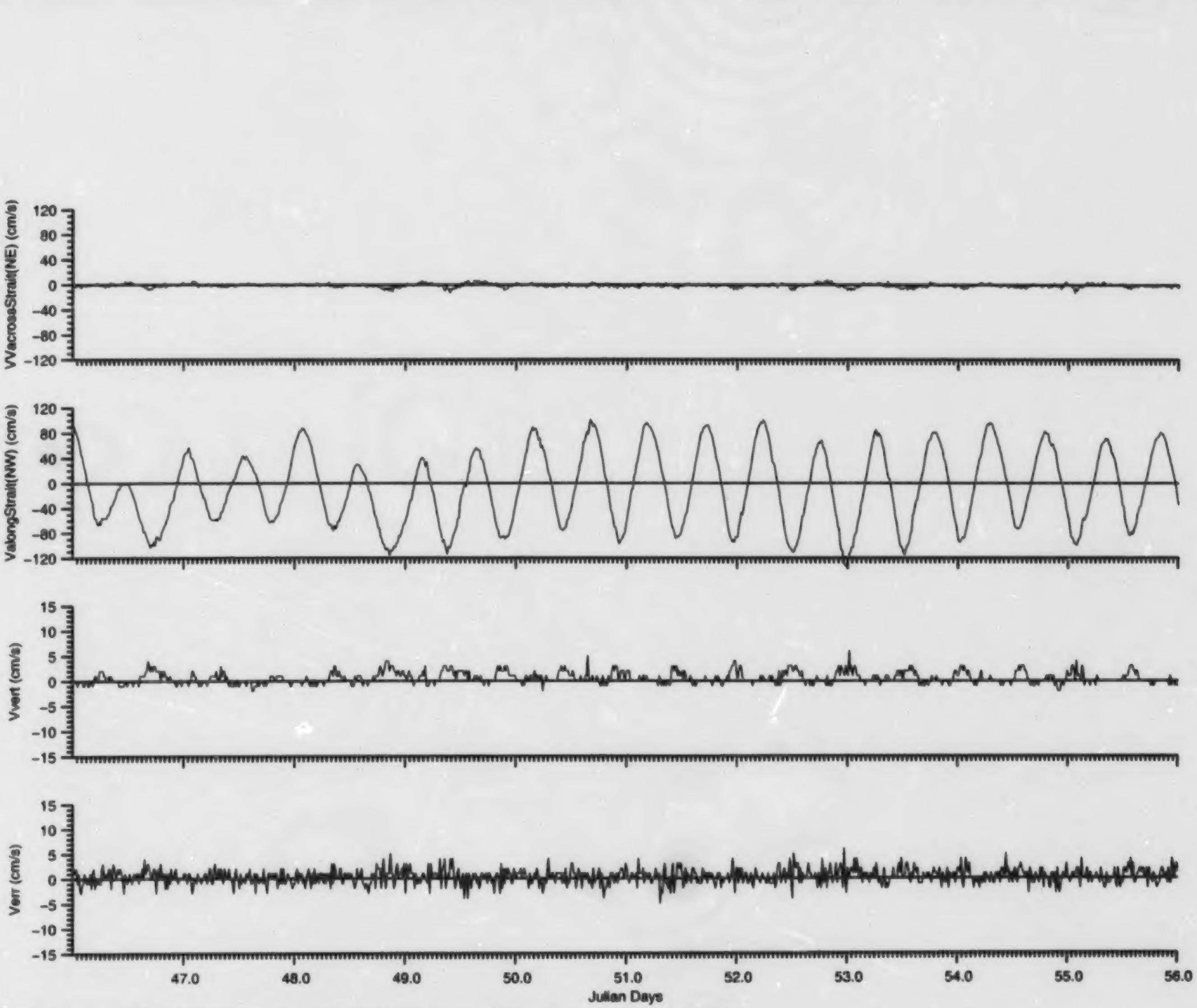
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m

Instrument: ADCP0512BIN5 Date: 2000/01/26 17:37:30.00 to 2000/02/05 00:07:30.02 GMT

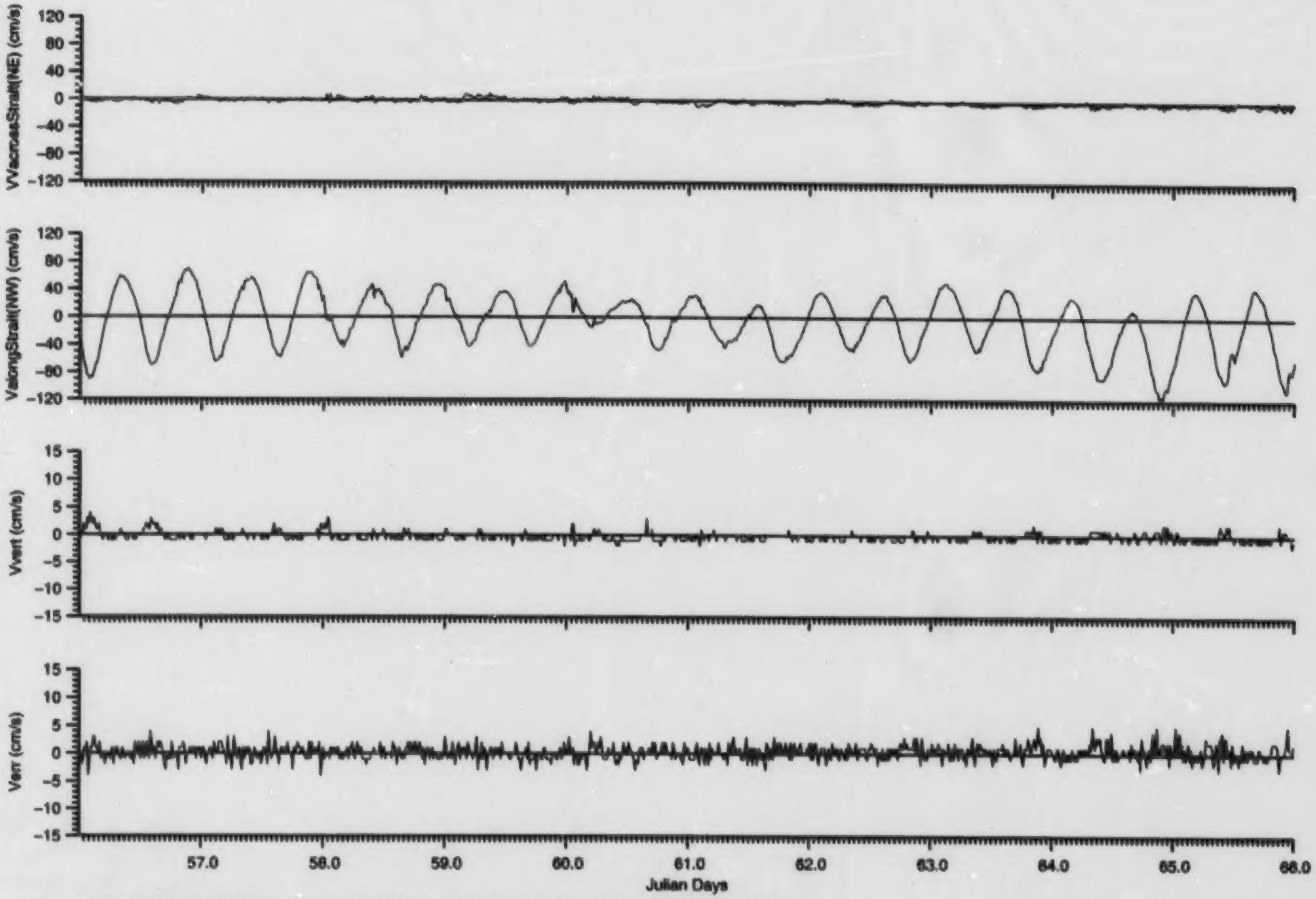


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m

Instrument: ADCP0512BIN5 Date: 2000/02/05 00:07:30.02 to 2000/02/15 00:07:30.03 GMT

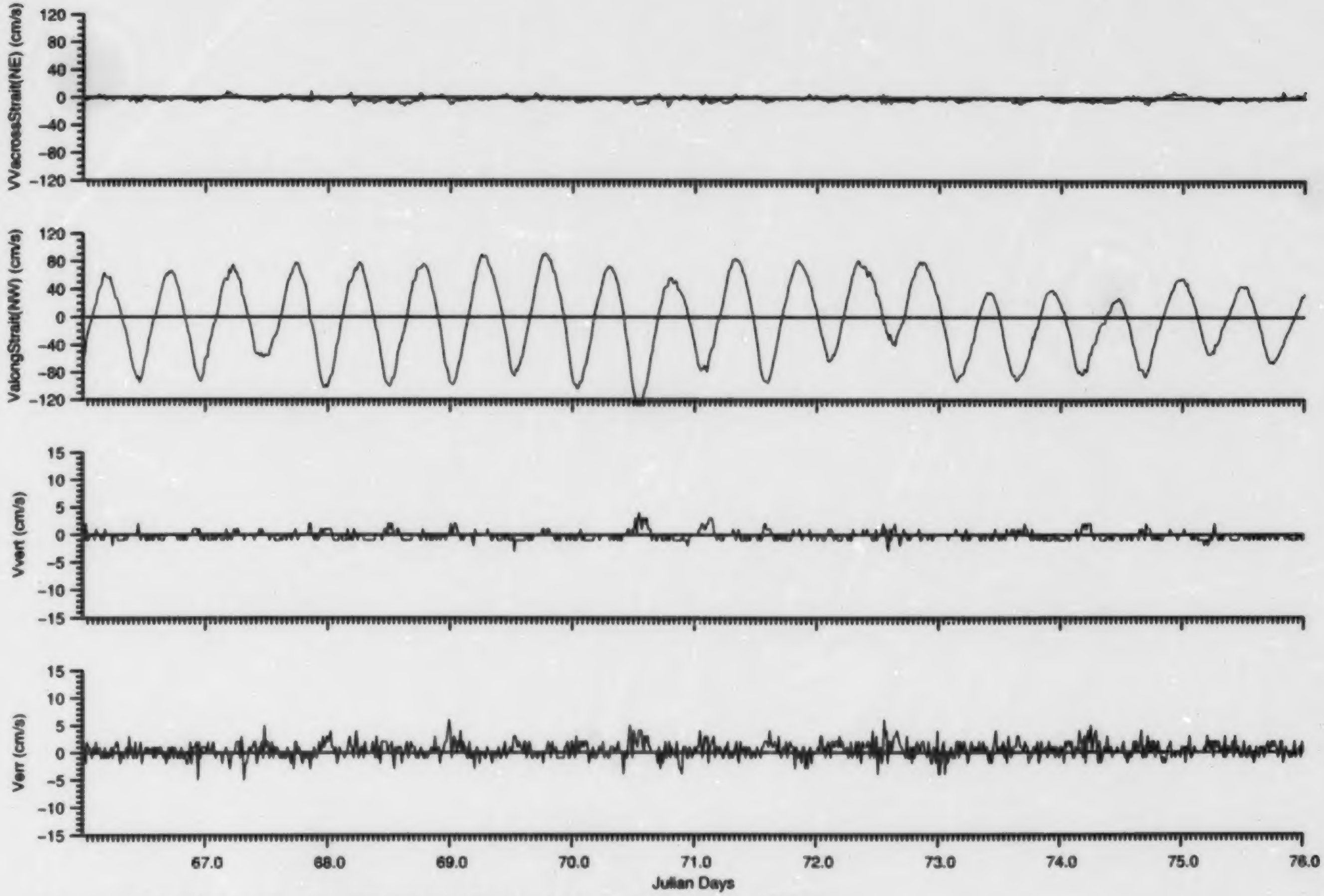


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m
Instrument: ADCP0512BIN5 Date: 2000/02/15 00:07:30.03 to 2000/02/25 00:07:30.05 GMT



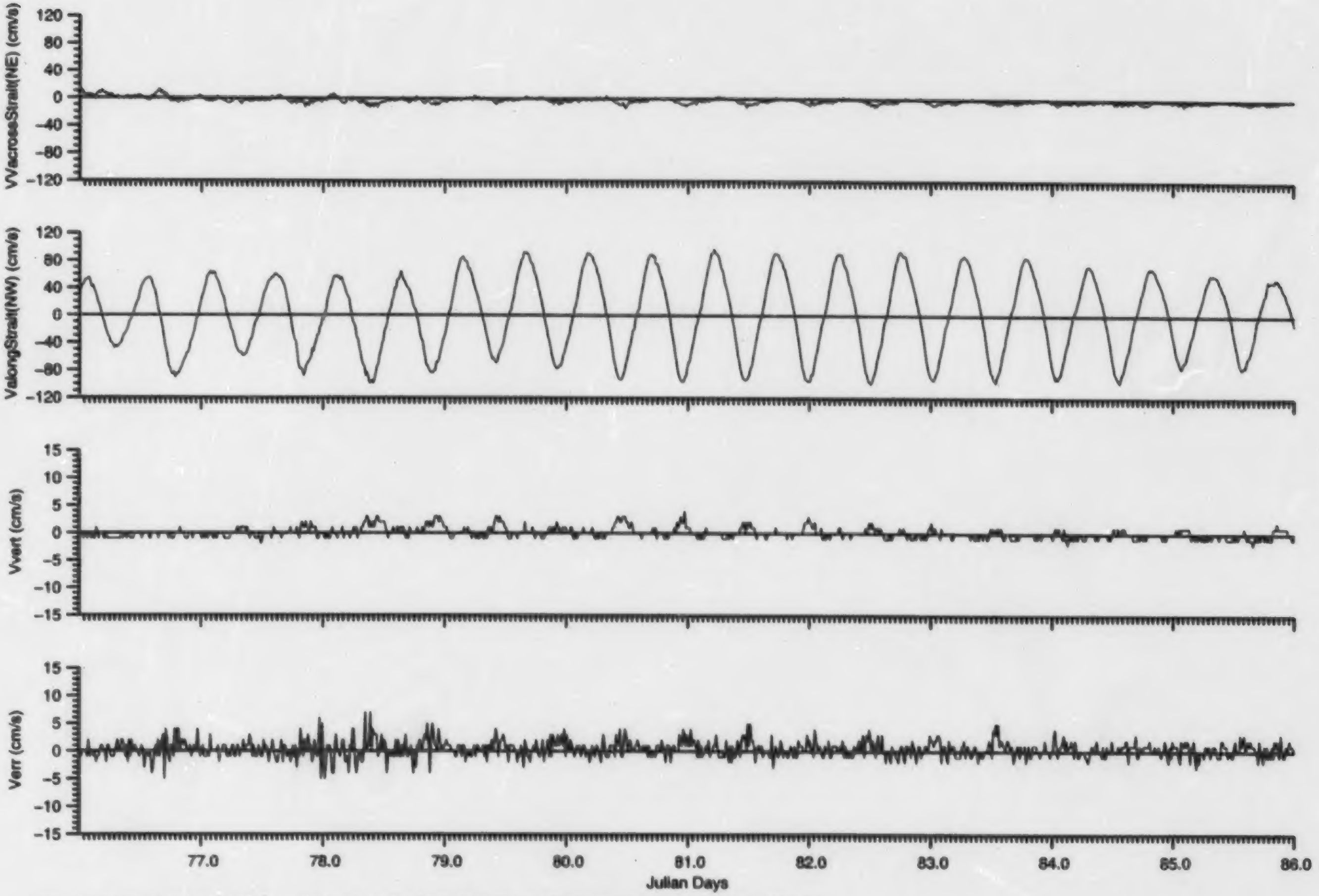
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m

Instrument: ADCP0512BIN5 Date: 2000/02/25 00:07:30.05 to 2000/03/06 00:07:30.07 GMT



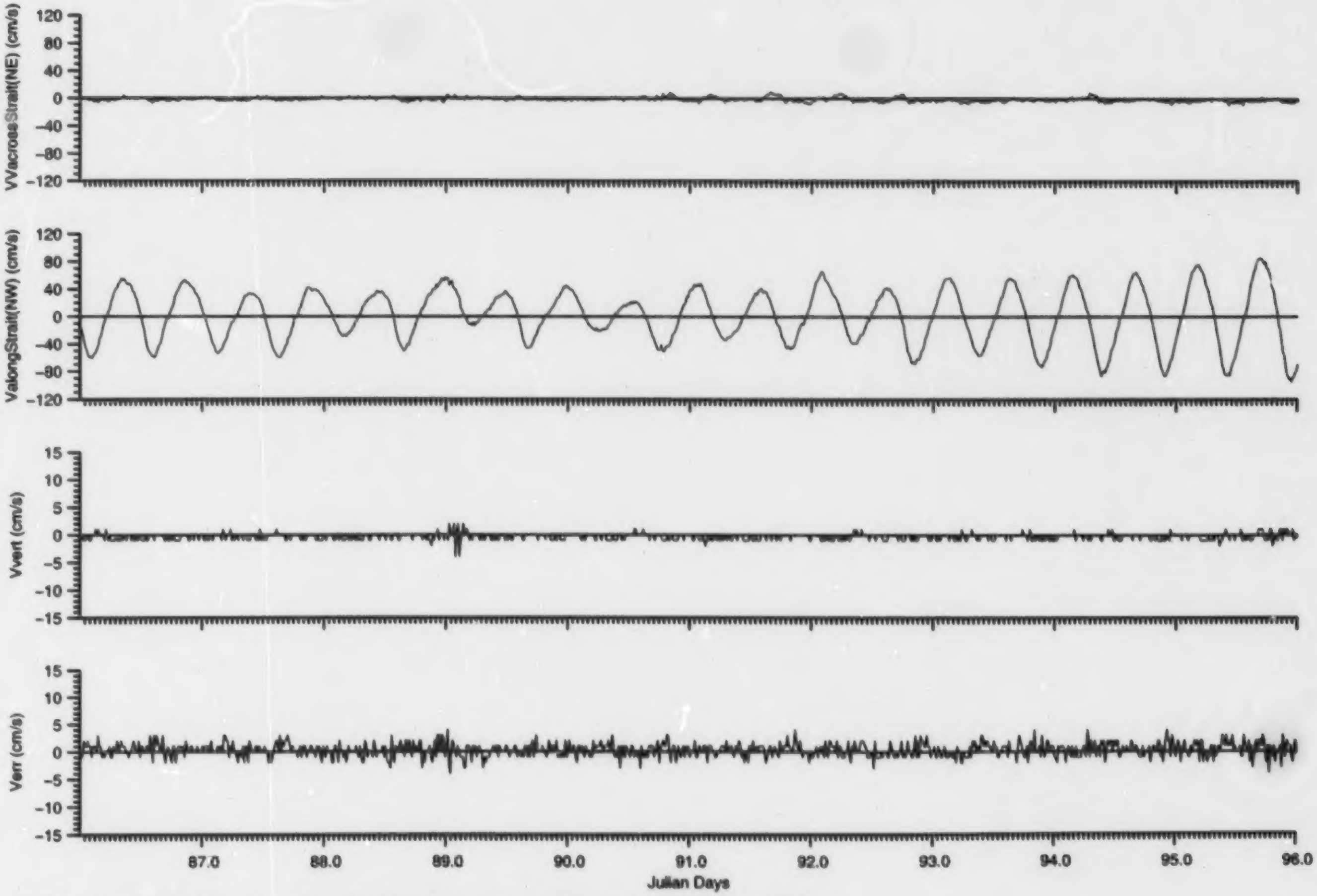
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m

Instrument: ADCP0512BIN5 Date: 2000/03/06 00:07:30.07 to 2000/03/16 00:07:30.08 GMT

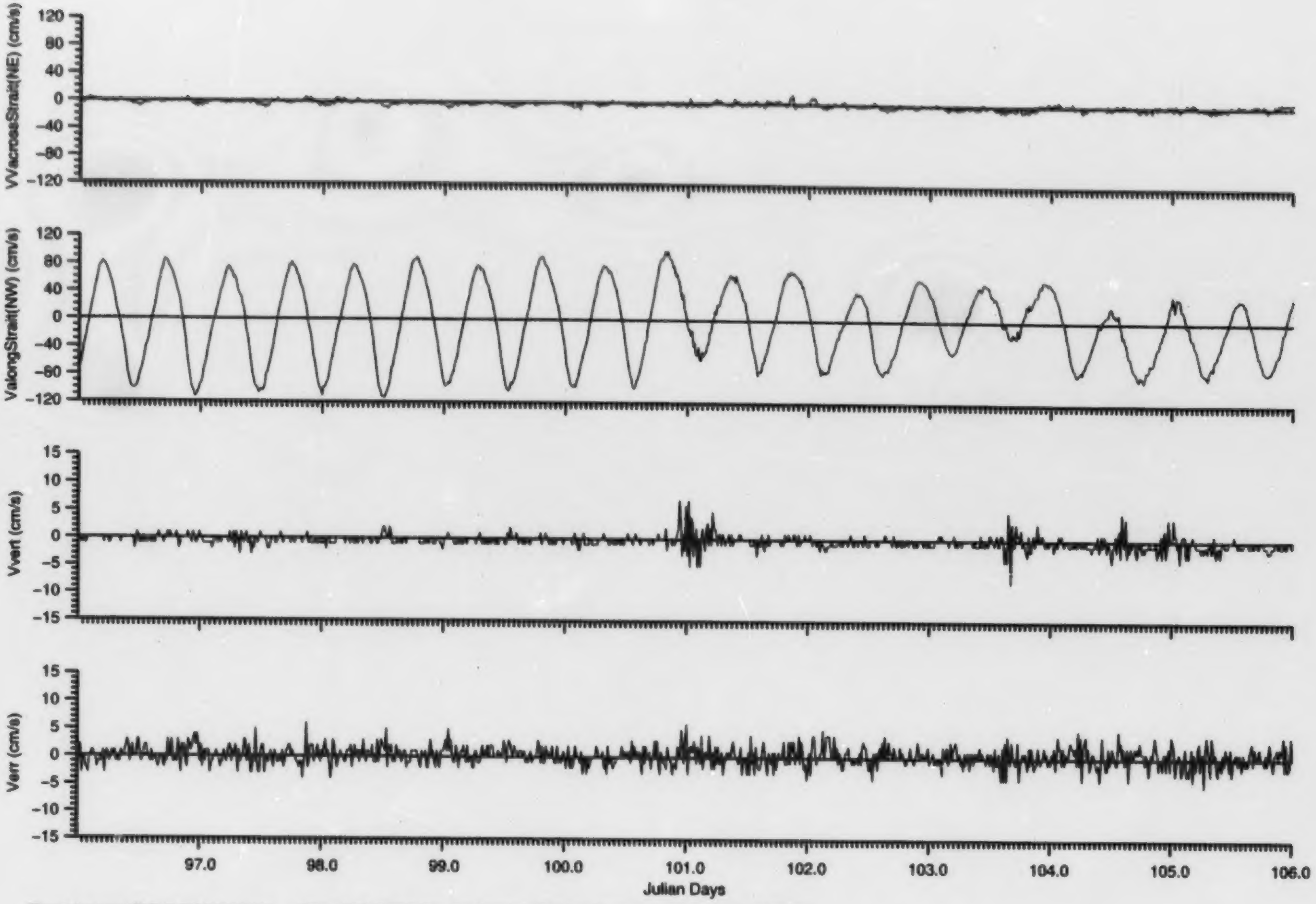


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m

Instrument: ADCP0512BIN5 Date: 2000/03/16 00:07:30.08 to 2000/03/26 00:07:30.10 GMT

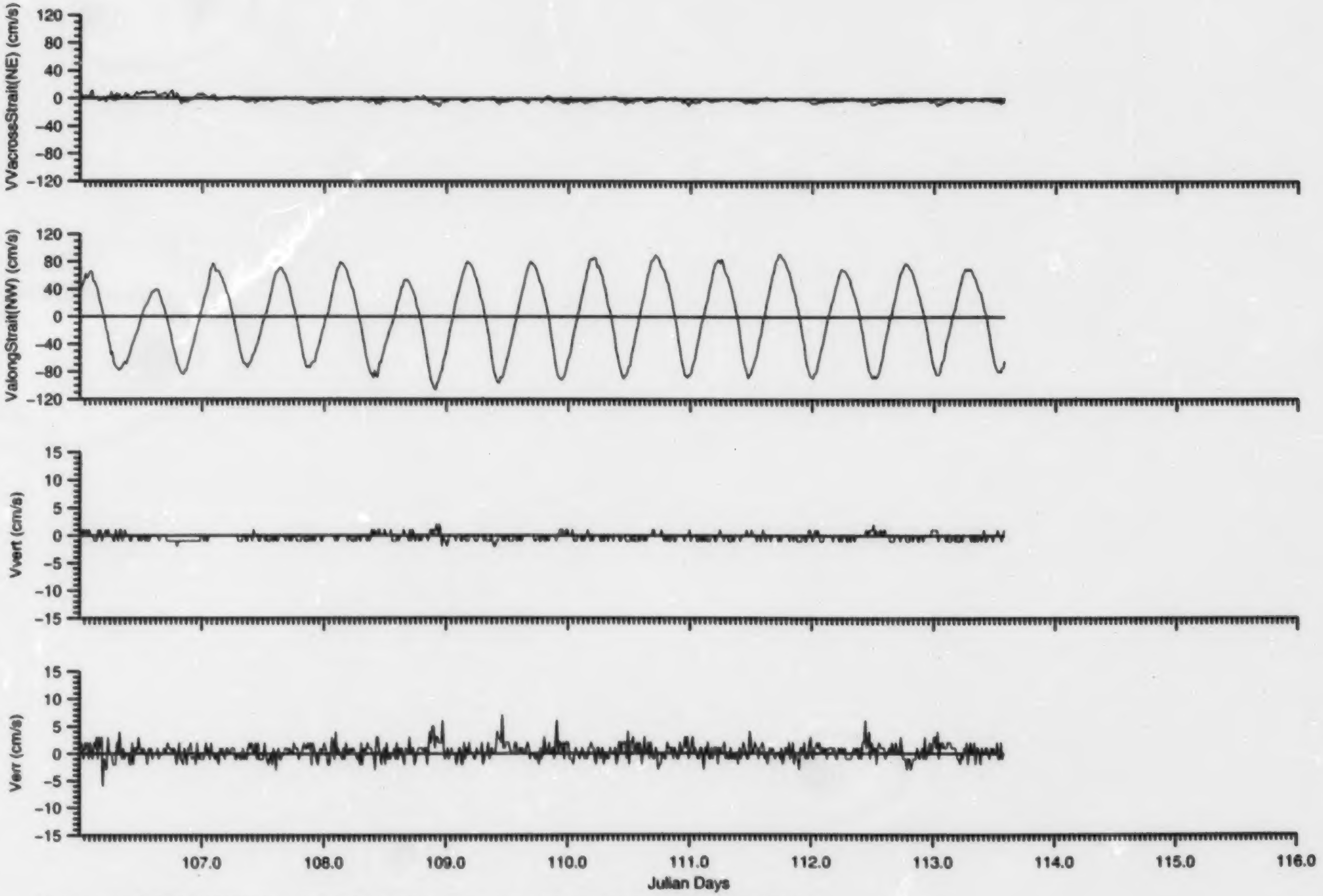


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m
Instrument: ADCP0512BIN5 Date: 2000/03/26 00:07:30.10 to 2000/04/05 00:07:30.12 GMT



Experiment: BIO BCD2000902　Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m
Instrument: ADCP0512BIN5　Date: 2000/04/05 00:07:30.12 to 2000/04/15 00:07:30.13 GMT

Filename: PEI2000ADCP512BIN5_ED2.DAT



Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Southeast Mooring 1342 6m

Instrument: ADCP0512BIN5 Date: 2000/04/15 00:07:30.13 to 2000/04/22 13:52:30.15 GMT

3.3 ADCP ICE Velocity

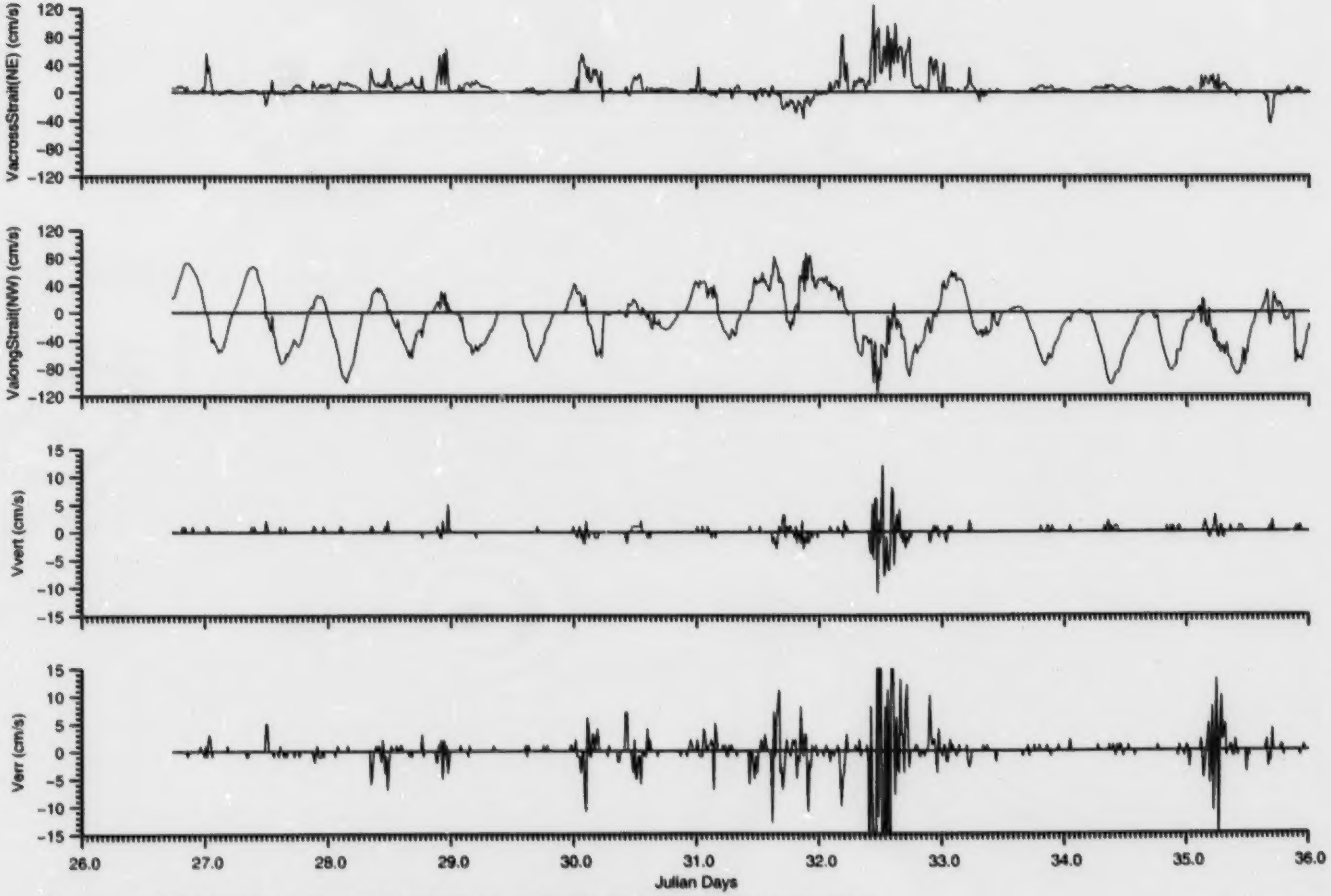
Two ADCP's were deployed at the Confederation Bridge from January to April 2000. The instruments were initially processed with BBLIST provided by RD Instruments. The Ice Velocity is measured using the bottom track mode of an upward looking ADCP. A correction of +28.5° was applied in BBLIST to correct for -21.5° of magnetic variation and +50° to align the components of flow with the axis of the channel(310°/130°). Time was adjusted by +7.5 min from the start time recorded on the log sheet to reflect the center of the sample interval. Further processing and analysis was carried out using software developed at ASL Environmental with site and instrument specific changes made during processing. As we do not have a valid measurement of ice velocity during open water periods, an estimate of the expected ice velocity must be provided so the ice draft data can be converted to a draft vs. distance data set. A regression is run between the remaining ice velocity data, the water velocity below the ice, and the wind speed and direction. The regression is then used to fill in the open water data points.

3.3.1 ADCP 499 Northwest Mooring 1343, Jan 26 – Mar 15

ADCP 499 was deployed on the Northwest side of the Confederation Bridge on January 26, at 46 ° 12.430'N, -63° 45.540'W at 18m in a water depth of 20m with a 15 minute average period. The times have been corrected for clock drift. The following are the ice velocities as measured before the regression has been run. The ice velocity data have been edited to end March 15th, as there was little to no ice after this time.

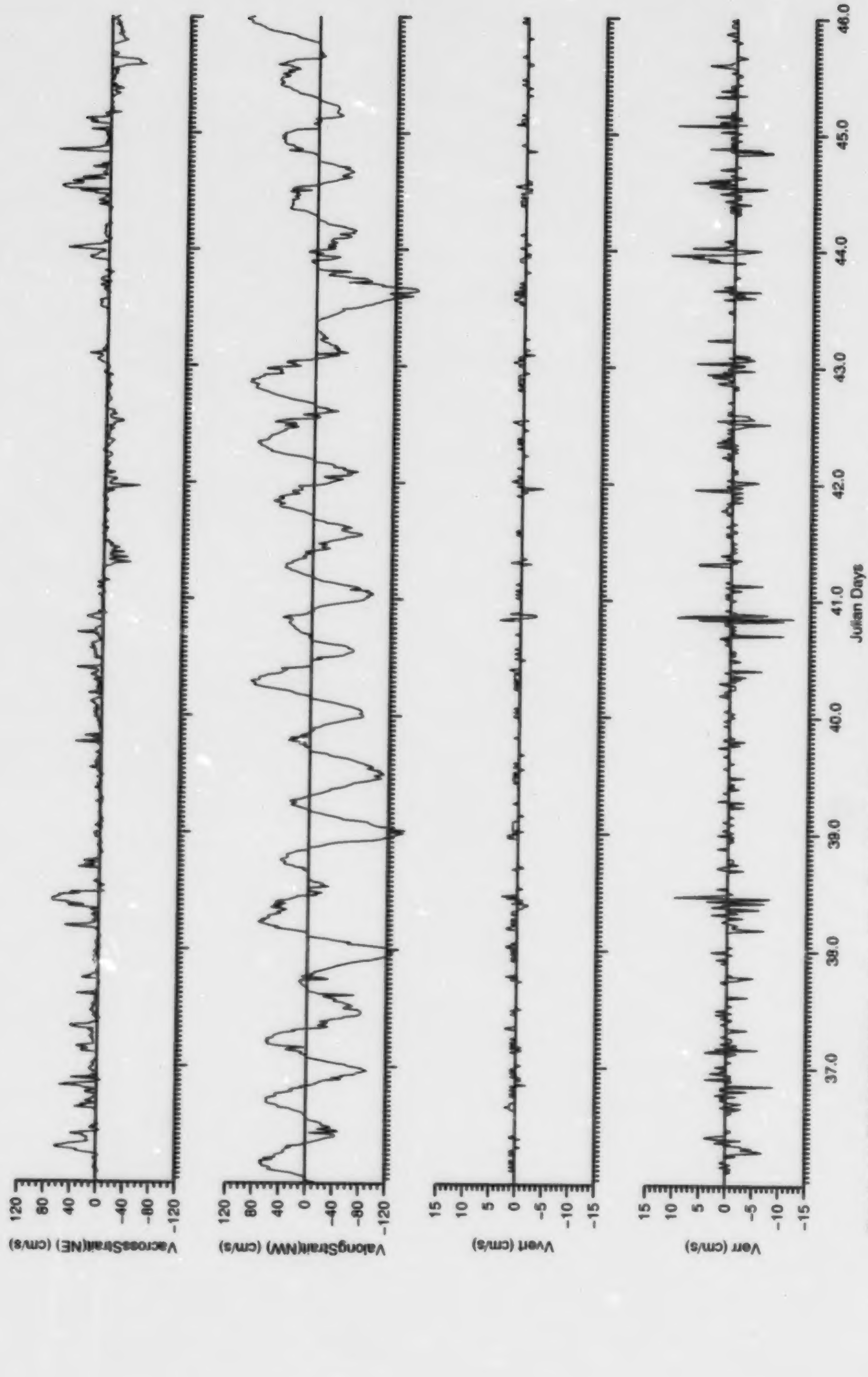
Note the increased scatter in the across strait and along strait components during periods of high error and vertical velocity. These are periods of open, or partially open water.

Also note the periods of zero ice velocity when the ice is stopped against the bridge piers.

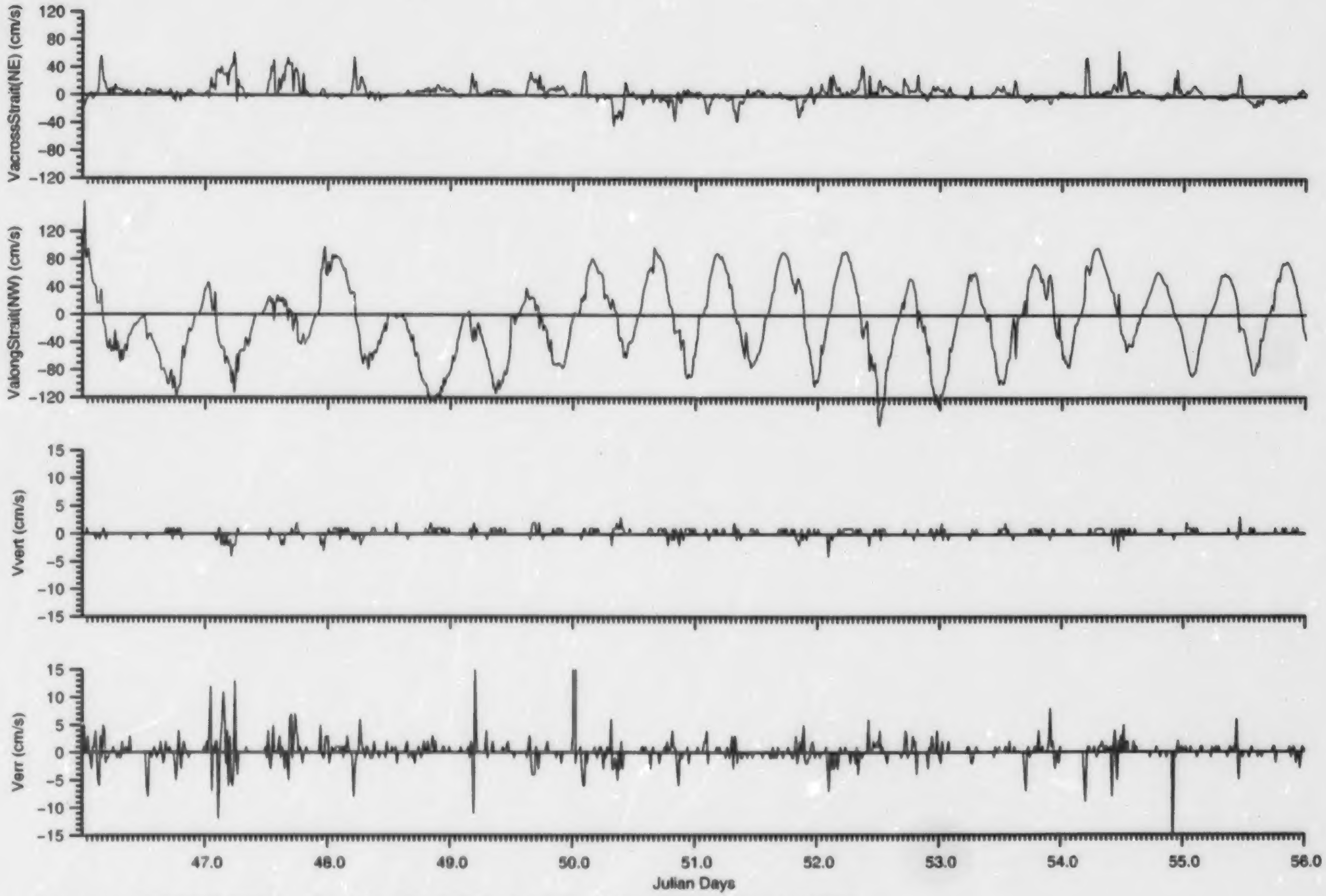


Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Northwest Mooring 1343 Ice

Instrument: ADCP0499ICE Date: 2000/01/26 17:37:30.00 to 2000/02/05 00:07:30.01 GMT

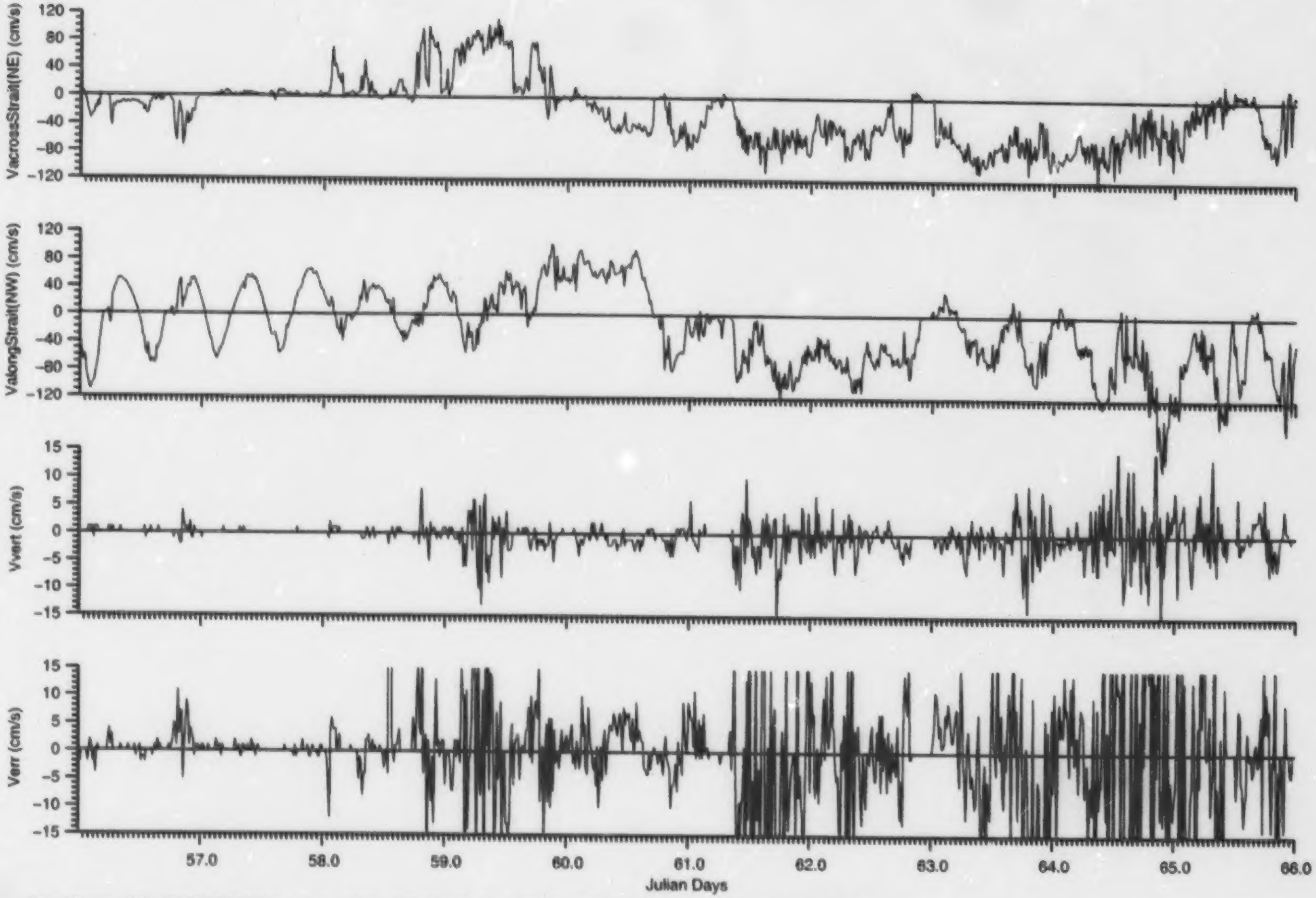


Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Northwest Mooring 1343 Ice
Instrument: ADCP0499ICE Date: 2000/02/05 00:07:30.01 to 2000/02/15 00:07:30.02 GMT



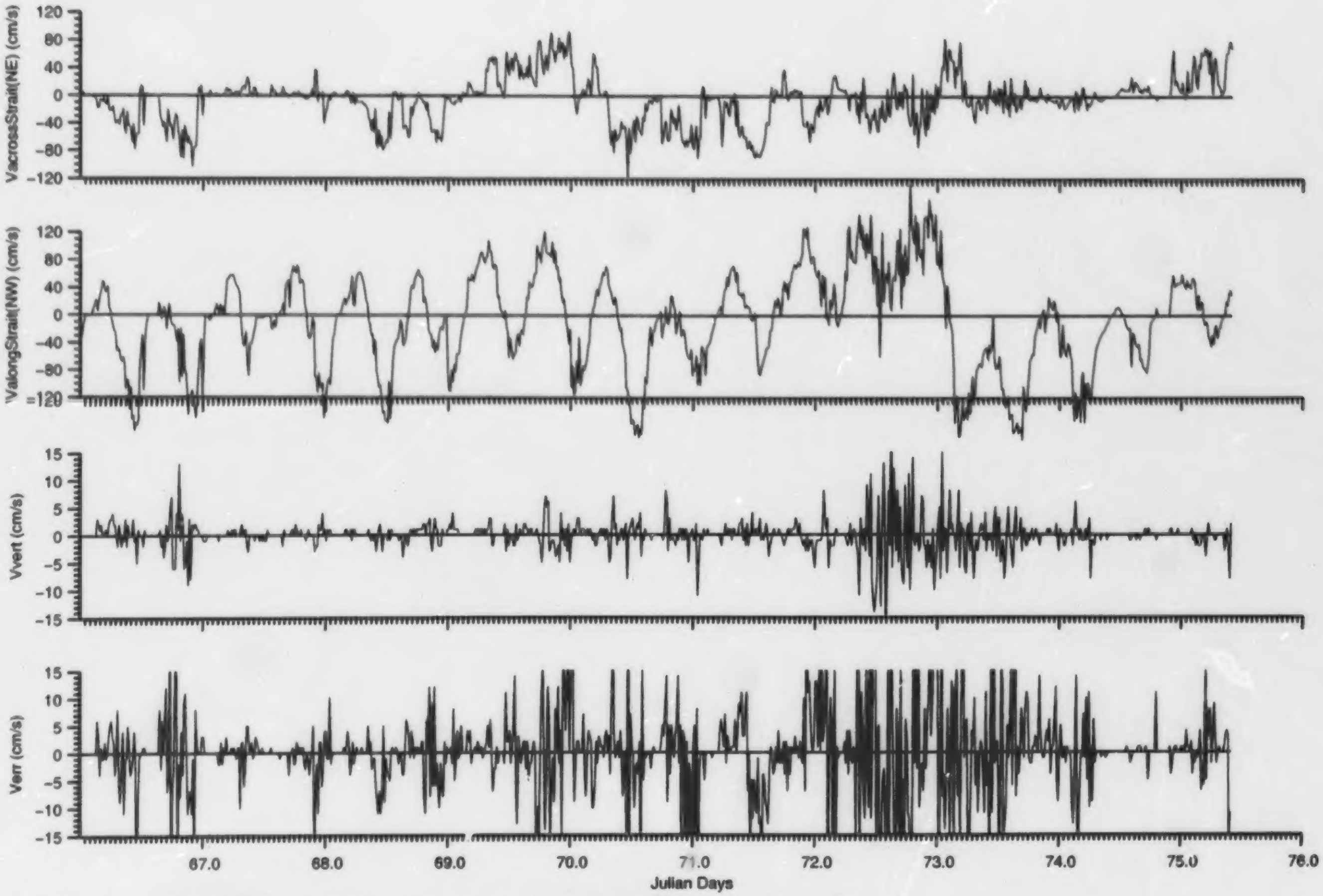
Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Northwest Mooring 1343 Ice

Instrument: ADCP0499ICE Date: 2000/02/15 00:07:30.02 to 2000/02/25 00:07:30.04 GMT



Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Northwest Mooring 1343 Ice

Instrument: ADCP0499ICE Date: 2000/02/25 00:07:30.04 to 2000/03/06 00:07:30.05 GMT



Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Northwest Mooring 1343 Ice

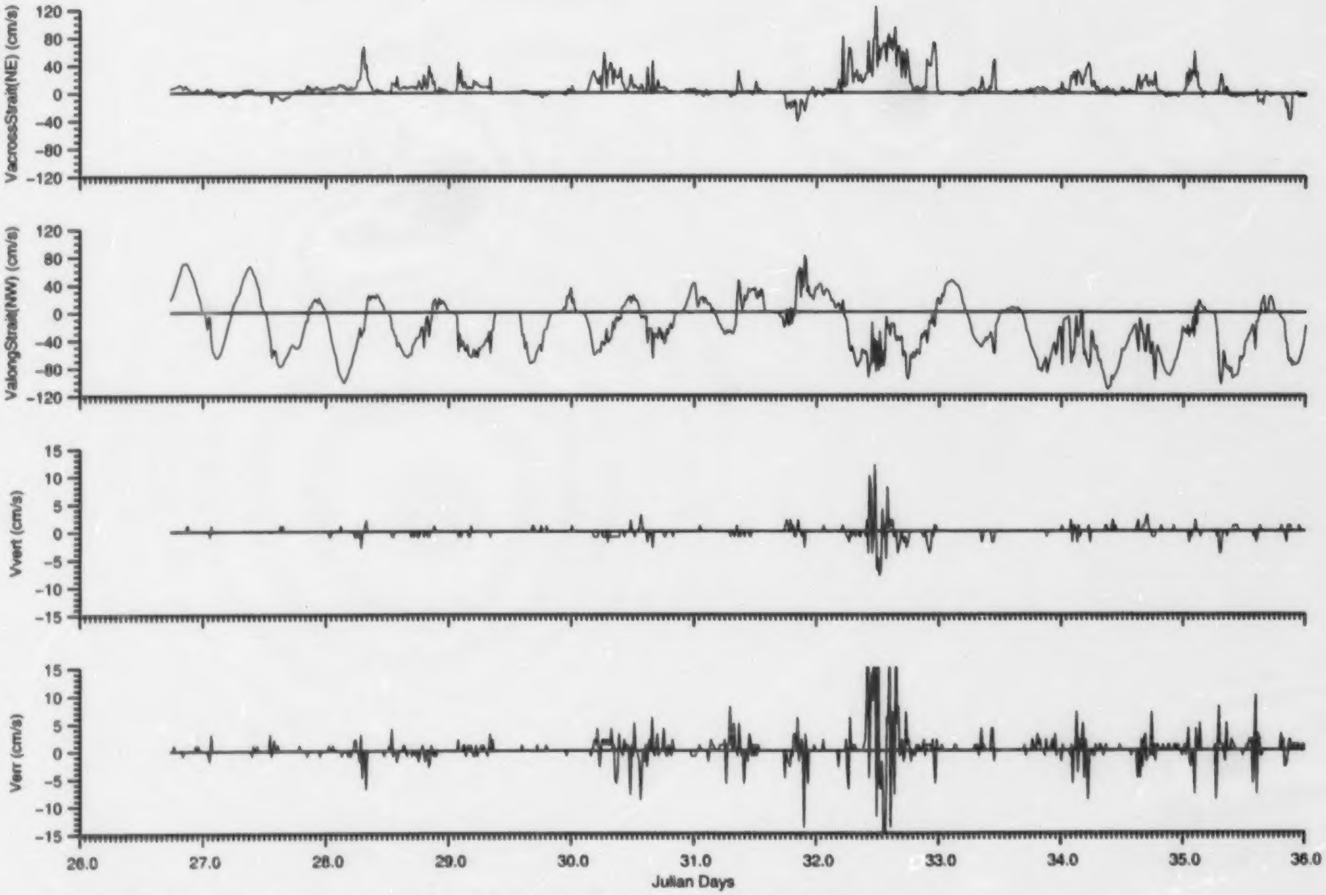
Instrument: ADCP0499ICE Date: 2000/03/06 00:07:30.05 to 2000/03/15 09:52:30.06 GMT

3.3.2 ADCP 512 Southeast Mooring 1342, Jan 26 – Mar 15

ADCP 512 was deployed on the Southeast side of the Confederation Bridge on January 26, at 46° 12.266'N, -63° 45.361'W at 18m in a water depth of 20 m with a 15 minute sample interval. The sample interval has been corrected for clock drift. The following are the ice velocities as measured before the regression has been run. The ice velocity data have been edited to end March 15th, as there was little to no ice after this time.

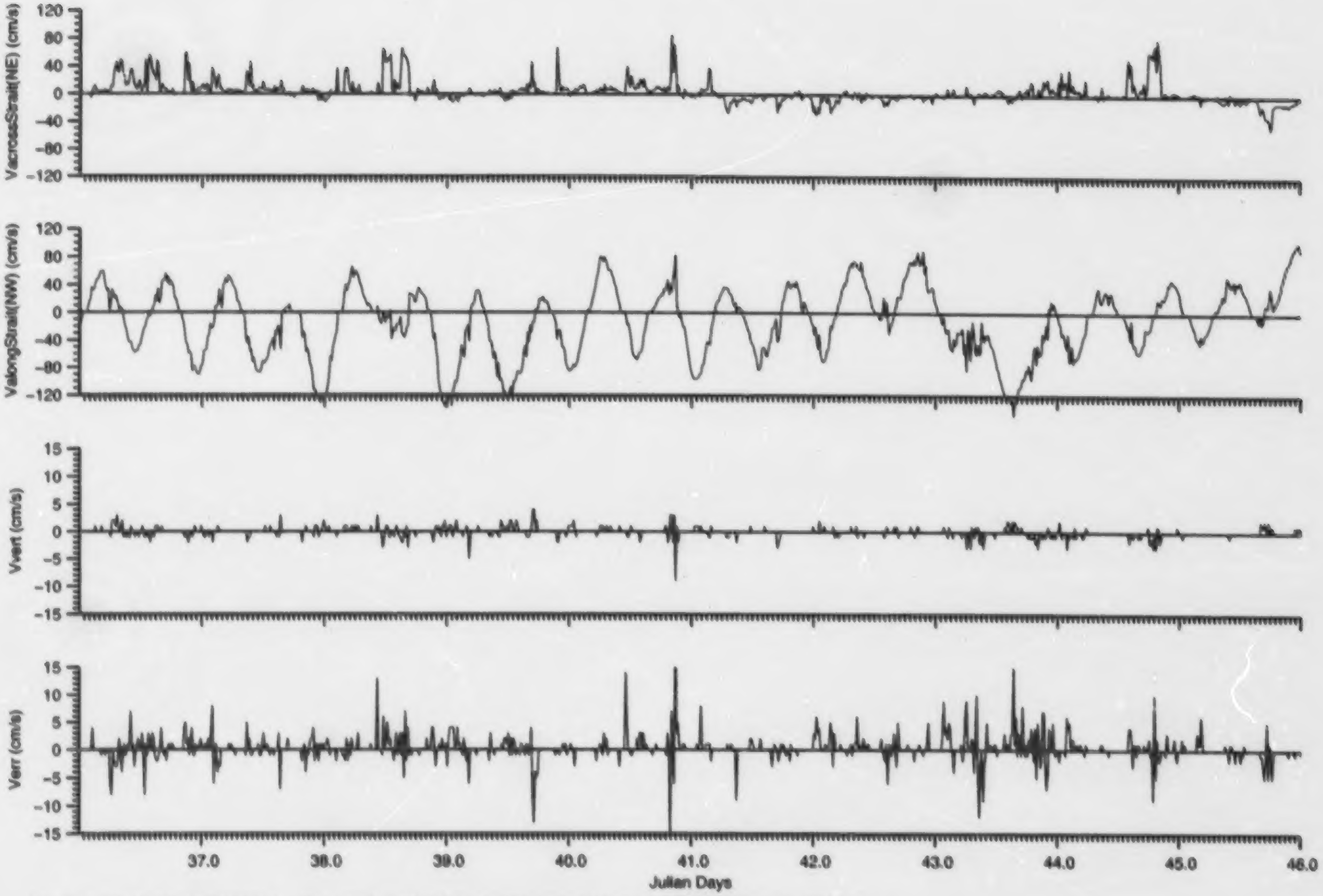
Note the increased scatter in the across strait and along strait components during periods of high error and vertical velocity. These are periods of open, or partially open water.

Also note the periods of zero ice velocity when the ice is stopped against the bridge piers.



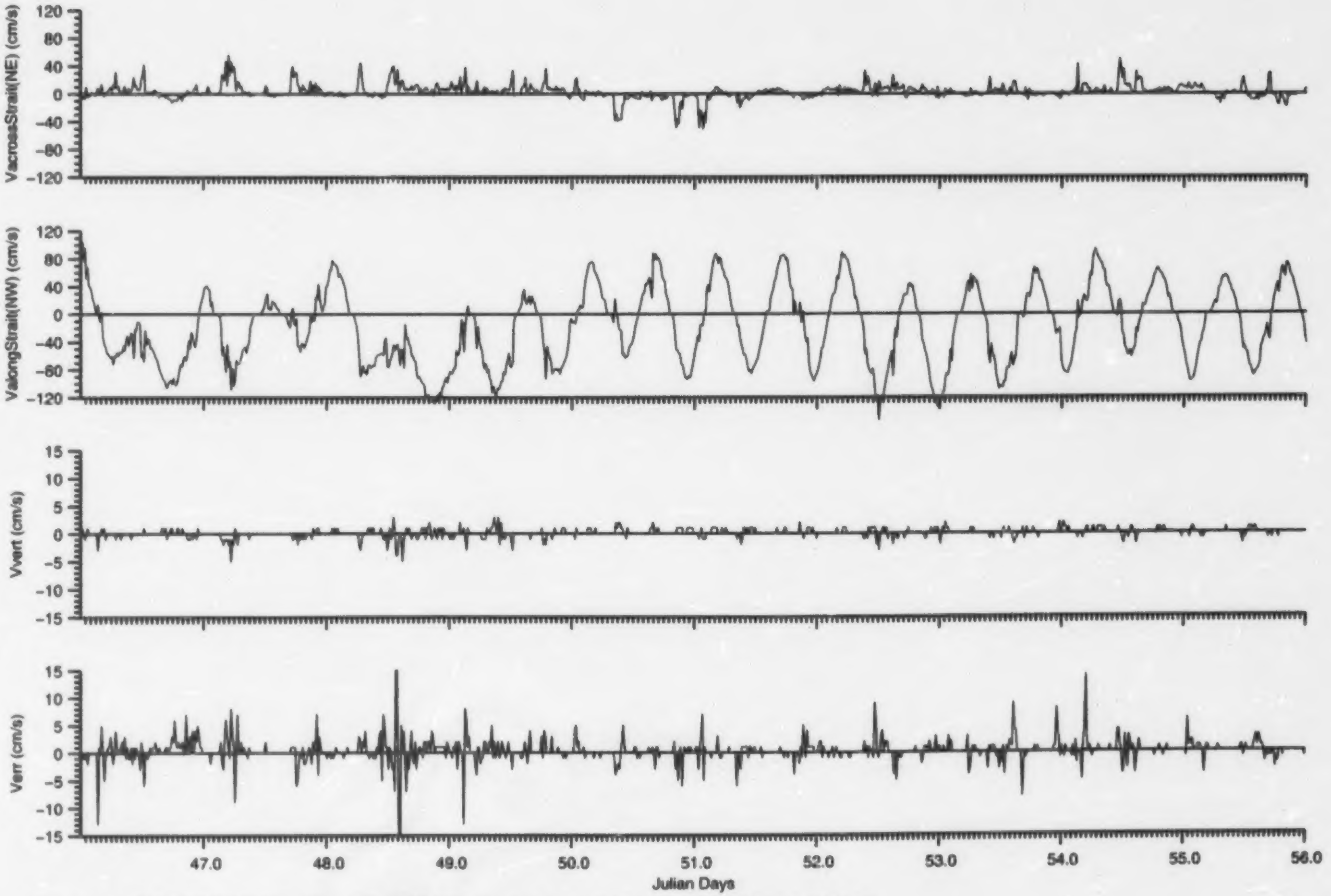
Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Southeast Mooring 1342 Ice

Instrument: ADCP0512ICE Date: 2000/01/26 17:37:30.00 to 2000/02/05 00:07:30.02 GMT



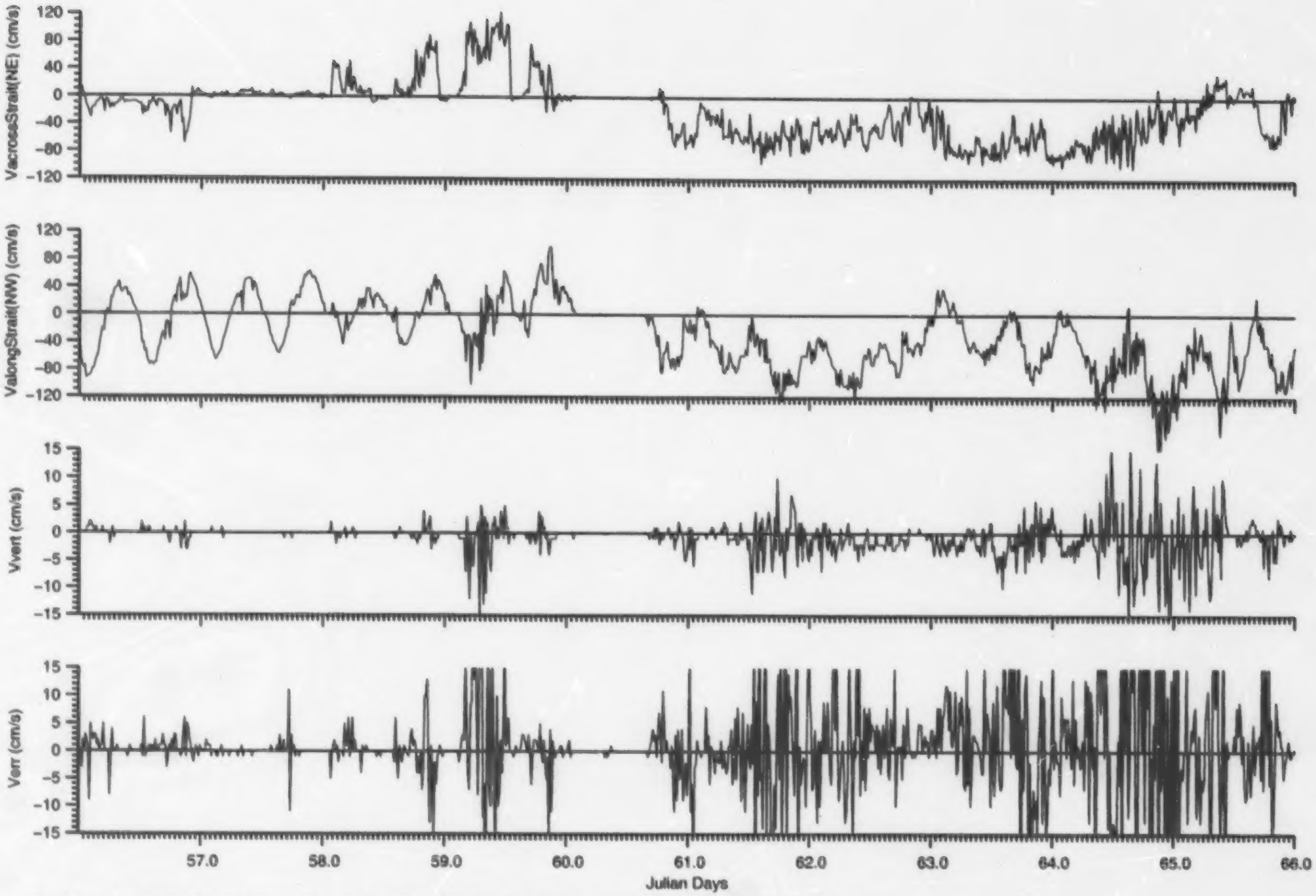
Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Southeast Mooring 1342 Ice

Instrument: ADCP0512ICE Date: 2000/02/05 00:07:30.02 to 2000/02/15 00:07:30.03 GMT



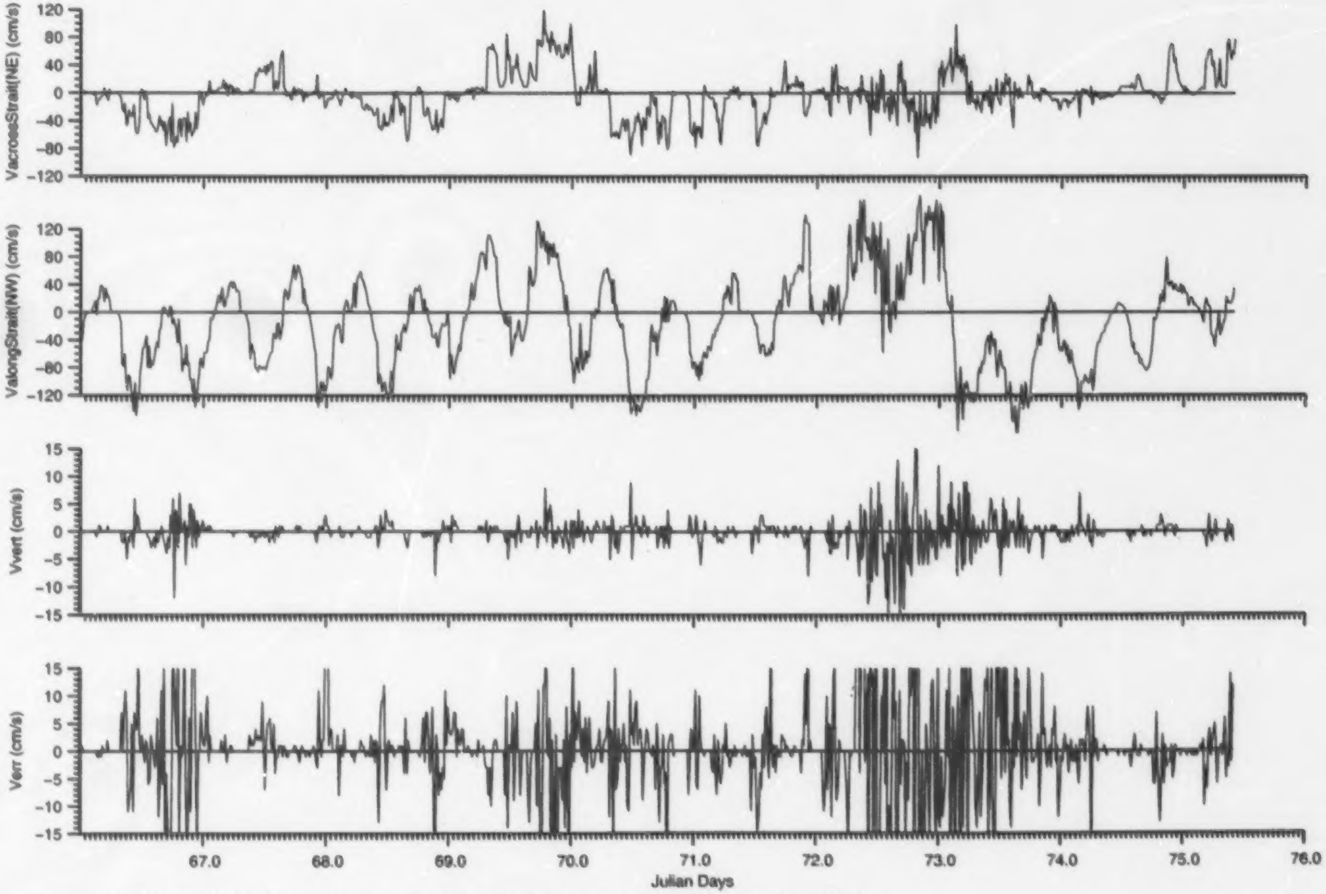
Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Southeast Mooring 1342 Ice

Instrument: ADCP0512ICE Date: 2000/02/15 00:07:30.03 to 2000/02/25 00:07:30.05 GMT



Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Southeast Mooring 1342 Ice

Instrument: ADCP0512ICE Date: 2000/02/25 00:07:30.05 to 2000/03/06 00:07:30.07 GMT



Experiment: BIO BCD2000902 Site : PEI – PEI 2000 Confederation Bridge Southeast Mooring 1342 Ice

Instrument: ADCP0512ICE Date: 2000/03/06 00:07:30.07 to 2000/03/15 09:52:30.08 GMT

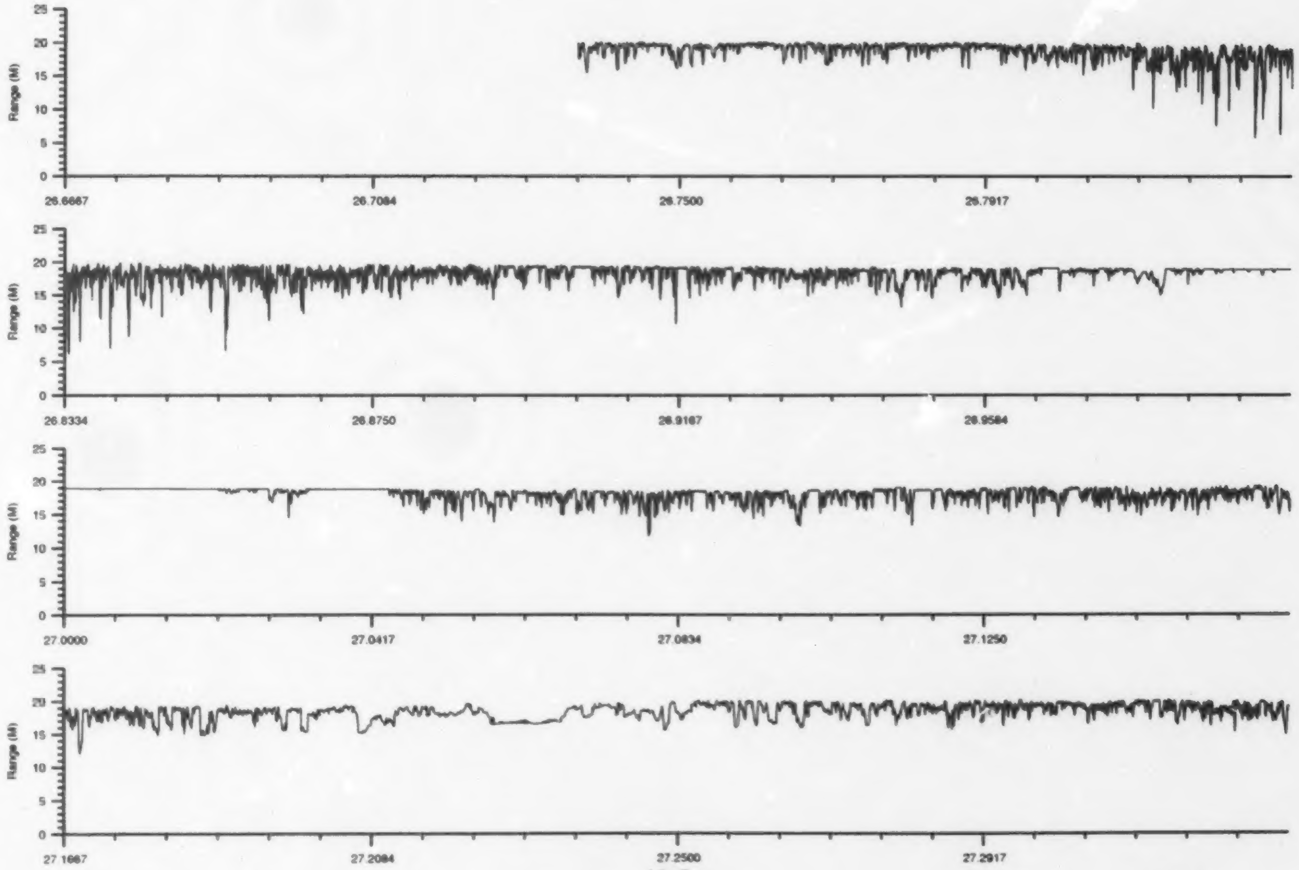
3.4 Ice Profiling Sonar

To produce spatial data from the time series of IPS ranges involves a large effort. The one second sampling rate of the IPS creates large data volumes. The range data must be corrected for variations in sound velocity as determined by CTD (Conductivity, Temperature, Depth) profiles taken at deployment, recovery and through the ice during the deployment period. The corrected ranges are combined with the pressure data and the atmospheric data to produce ice draft time series. The draft data are edited to ensure periods of open water are set to zero ice draft. The ADCP ice velocity measurement will show large vertical and error velocities during periods when there are significant amounts of open water. Open water periods can also be determined by examining the IPS draft data and looking for periods of zero draft or obvious surface waves. The ice draft data are combined with the ADCP ice-regression data to calculate ice displacement over a uniform distance.

3.4.1 Range Data IPS 1013 Northwest Mooring 1345, Jan 26

The following plot represents the first partial day of range data for IPS instrument 1013, mooring number 1345, on the Northwest side of Bridge Pier 24 at 46° 12.409N and -63° 45.524W in water depth of 20m. The instrument was deployed on a clear day with 35-knot winds in heavy ice. The data have a sample interval of approximately 1 second. A time correction has been applied to correct for clock drift. A single speed of sound correction was applied at this point for the entire deployment. The data have been despiked.

Note the deep spikes in the range data from days 26.8 – 26.975. These spikes correspond to a period of flow to the northwest and are visible through much of the deployment. IPS 1013 was deployed directly in line with the bridge pier. It appears that turbulence from flow around the pier has contaminated the IPS ranges during flow to the northwest.



Range statistics (m):
Mean = 18.24
Min = 5.89
Max = 20.20
StdDev = 1.19

Percentiles :
5% : 16.08
50% : 18.51
95% : 19.72

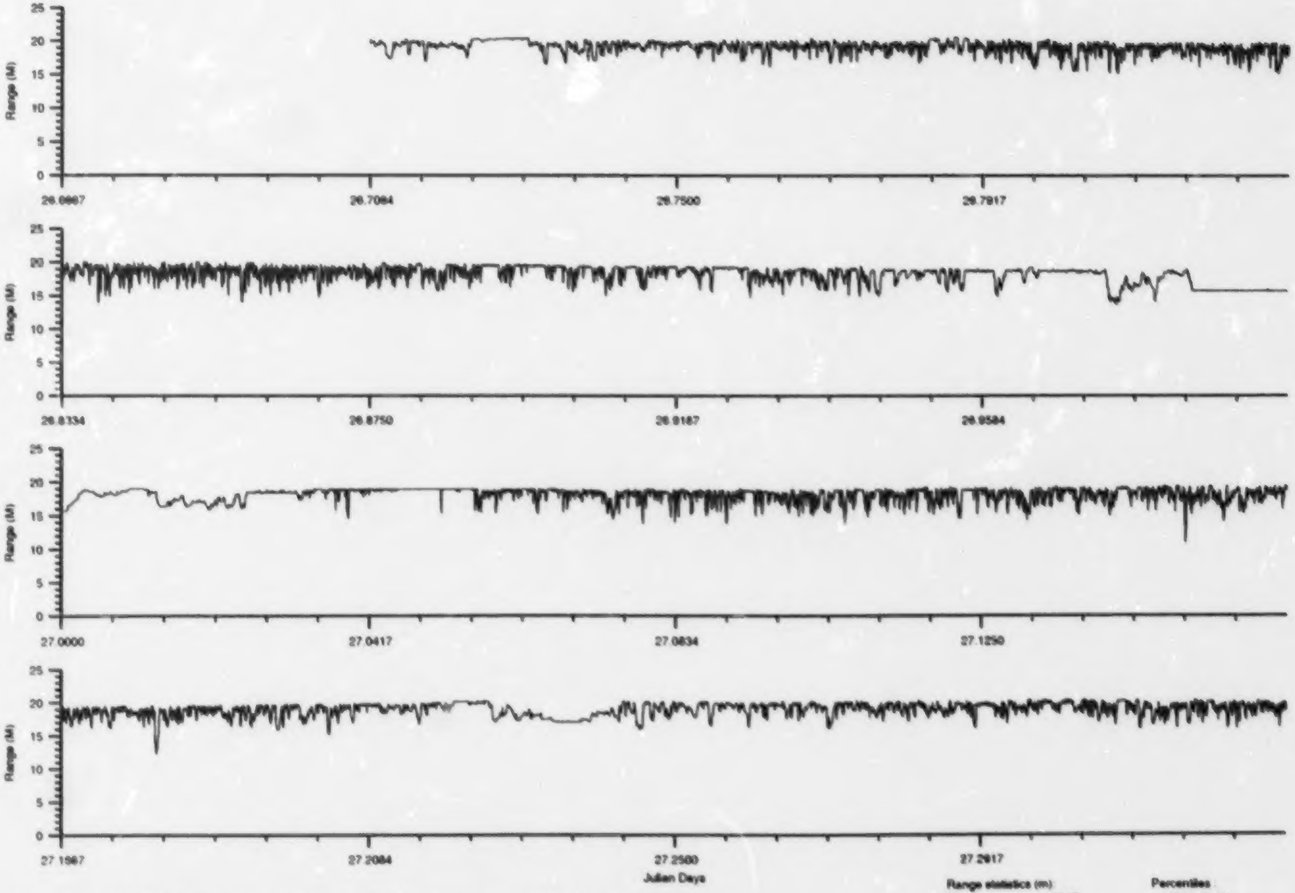
Experiment: BCD2000902
Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Range
Date: 2000/01/26 17:40:00.28 to 2000/01/27 08:00:00.87 GMT

3.4.2 Range Data IPS 1018 Southeast Mooring 1344, Jan 26

The following plot represents the first partial day of range data for IPS instrument 1018 mooring number 1344 on the Southeast side of Bridge Pier 24 at 46° 12.296N and -63° 45.346W on a frame on the bottom in a water depth of 20m. in a water depth of 20m. The instrument was deployed on a clear day with 30-knot winds in heavy ice. The data have a sample interval of approximately 1-second. A time correction has been applied to correct for clock drift. A single speed of sound correction was applied at this point for the entire deployment. The data have been despiked.

Note that this instrument does not display the spiky behavior of IPS 1013 during flow to the northwest or southeast. This unit was moored slightly off the main direction of flow from the pier and appears to have good range data during both northwest and southeast flow.



Range statistics (m):
Mean = 18.47
Min = 10.99
Max = 20.52
StdDev = 1.12

Percentiles:
5% : 16.11
50% : 18.71
95% : 19.90

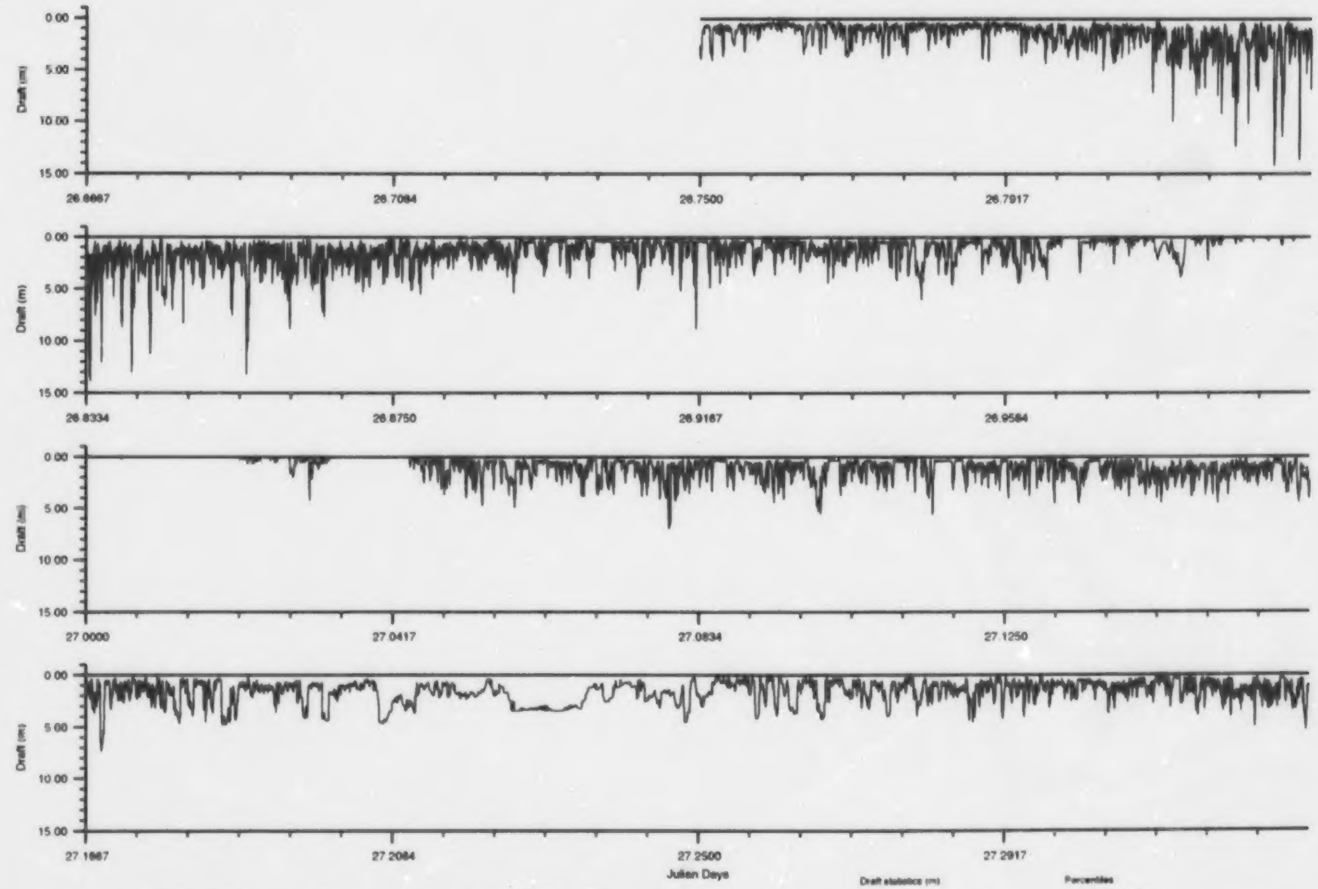
[illegible]

Experiment: BCD2000902 Site : Confederation Bridge 2000 Southeast Range
Instrument: IPS4-1018 Date: 2000/01/26 17:00:00.41 to 2000/01/27 08:00:00.97 GMT

3.4.3 Ice Draft Time Series 1013 Northwest Mooring 1345, Jan 26

The ice draft data set is a time series of despiked ice drafts computed from the range data, the water level data(from (IPS pressure data and atmospheric data), a daily correction for the speed of sound, and tilt magnitude data. Speed of sound was derived from calculations from data collected from CTD's at the beginning, middle and end of the mooring period. The tilt magnitude was very minimal as we had a bottom mounted non-gimbled frame mooring. One plot of a partial day of ice drafts is presented.

Note the deep spikes in the range data from days 26.8 - 26.975. These spikes correspond to a period of flow to the northwest and are visible through much of the deployment. IPS 1013 was deployed directly in line with the bridge pier. It appears that turbulence from flow around the pier has contaminated the IPS ranges during flow to the northwest.



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft

Date: 2000/01/26 18:00:00.25 to 2000/01/27 08:00:00.87 GMT

Draft statistics (m)

Mean = 1.37
Min = -0.07
Max = 14.17
StdDev = 1.21

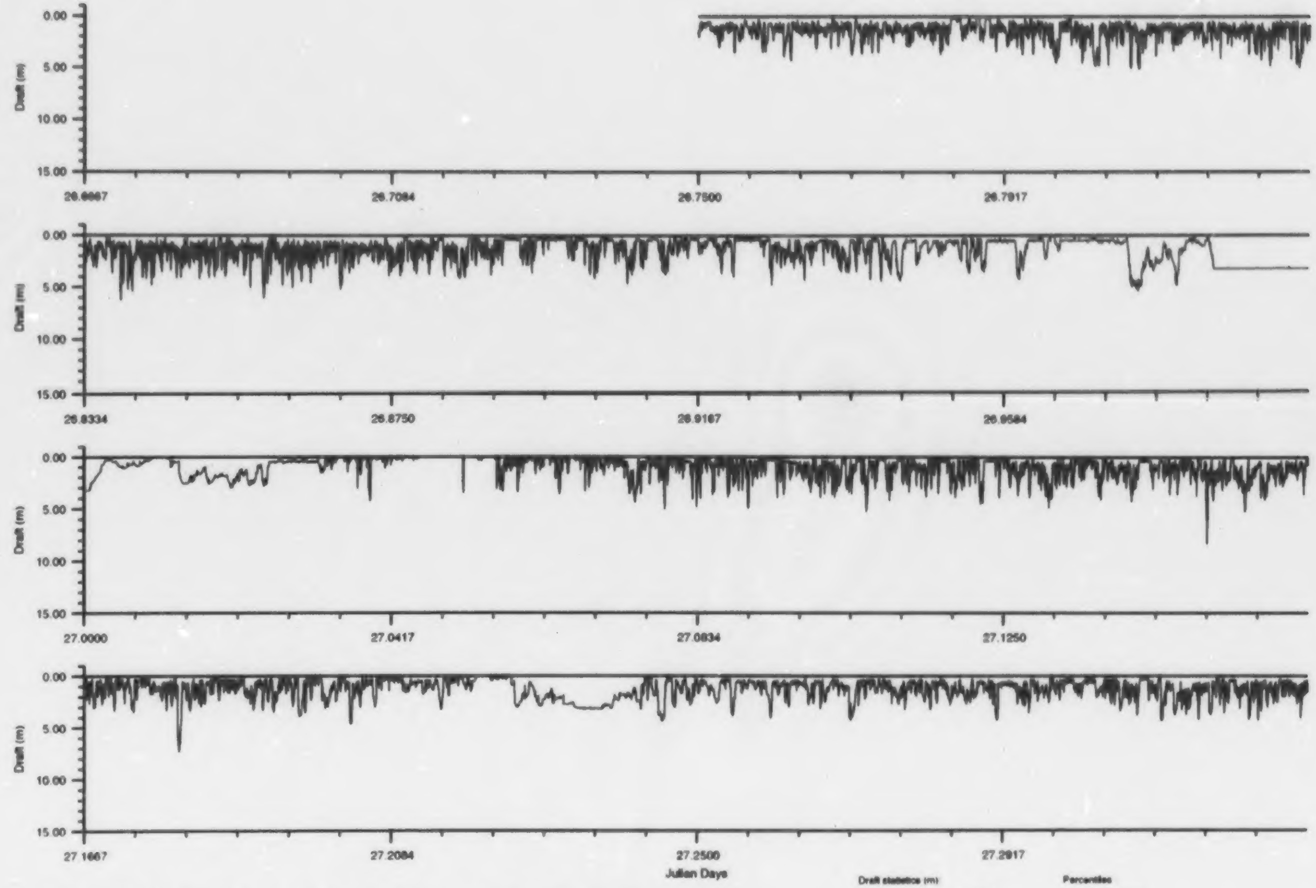
Percentiles

5% 0.00
50% 1.07
95% 3.57

[illegible]

3.4.4 Ice Draft Time Series 1018 Southeast Mooring 1344, Jan 26

The ice draft data set is a time series of despiked ice drafts computed from the range data, the water level data (from (IPS pressure data and atmospheric data), a daily correction for the speed of sound, and tilt magnitude data. Speed of sound was derived from calculations from data collected from CTD's at the beginning, middle and end of the mooring period. The tilt magnitude was very minimal as we had a bottom mounted non-gimbled frame mooring. One plot of a partial day of ice drafts is presented.



Experiment: BCD2000902
Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft
Date: 2000/01/26 18:00:00.31 to 2000/01/27 08:00:00.97 GMT

Draft statistics (m)

Mean	=	1.33
Min	=	−0.09
Max	=	8.36
StdDev	=	1.01

Percentiles

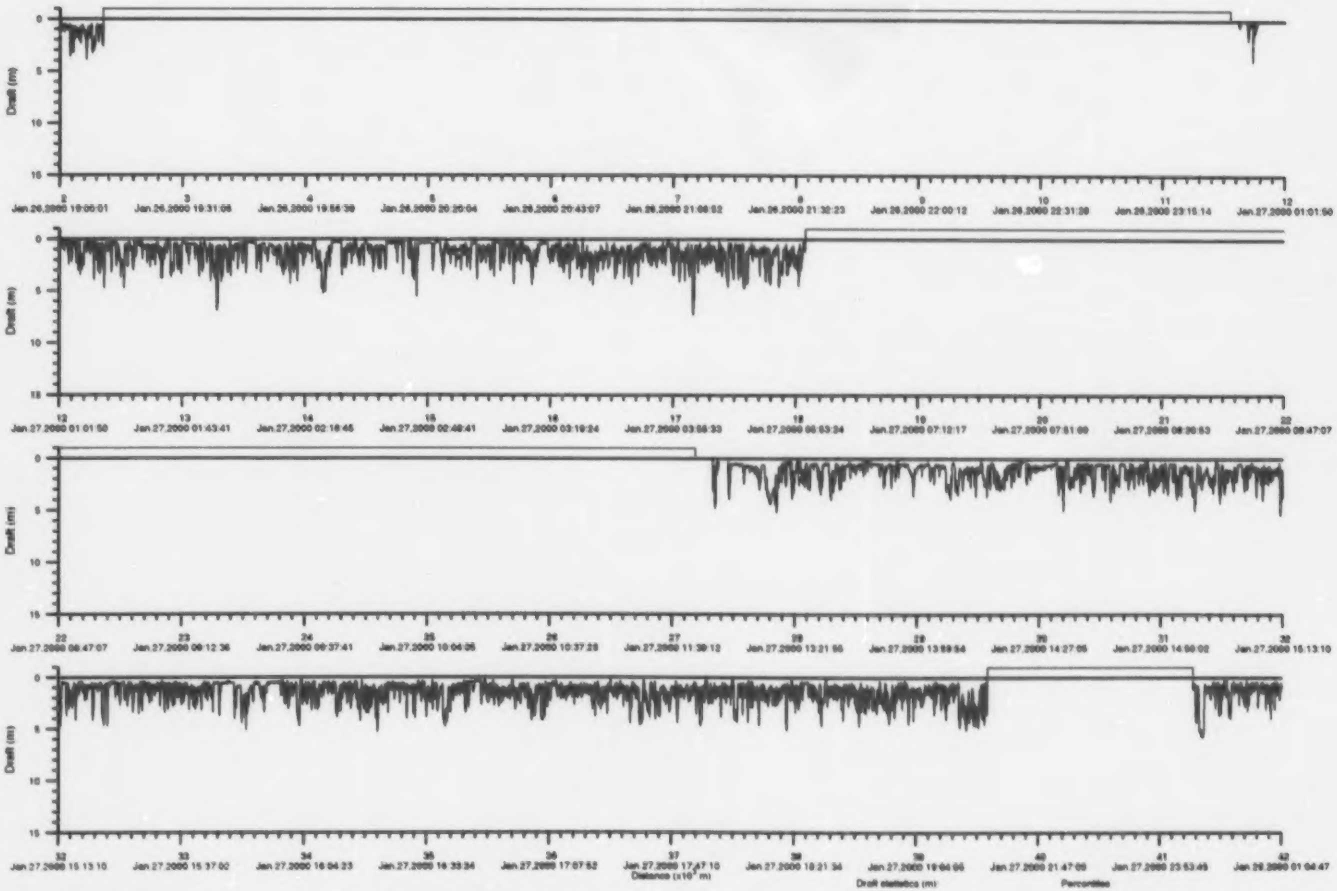
5%	0.13
50%	1.09
95%	3.23

Filename: [illegible]

3.4.5 Draft Vs Uniform Distance IPS 1013 Northwest 1345, Jan 26 – Mar 11

The final ice draft data set is a continuous spatial series with a 0.5-meter resolution in the horizontal and 1 cm resolution in the vertical. The ice draft data have negative spikes removed and open water periods, minimal ice periods, and suspect data flagged and masked. The masked draft data set has been combined with the edited ADCP ice velocities to compute Ice displacement. Periods of no motion are detected and a final data set of ice drafts verses uniform distance is presented here. IPS instrument 1013 mooring number 1345 was moored on January 26th on the Northwest side of Bridge Pier 24 at 46° 12.409N and -63° 45.524W in a water depth of 20m.

Drafts for all periods of flow to the northwest were contaminated by flow past the pier and have been set to –1m to distinguish them from open water or thin ice which have been flagged and set to 0m for plotting.



Experiment: BCD2000902
Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance
Date: 2000/01/26 19:00:01.24 to 2000/01/28 01:04:47.18 GMT

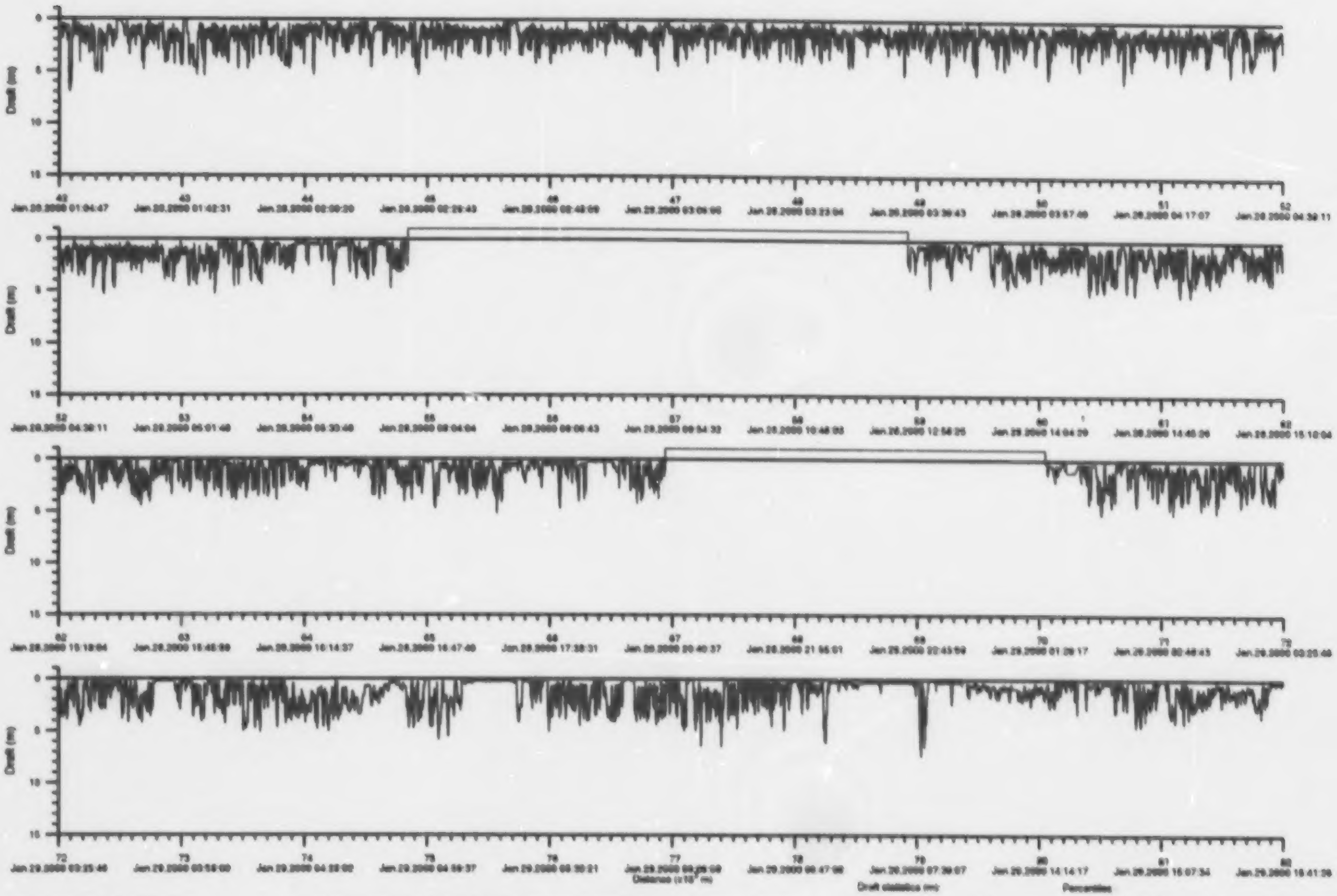
Draft statistics (m)

Mean = 1.43
Min = 0.00
Max = 7.31
StdDev = 0.96

Percentiles

5%	0.37	Ice	=	48.7 %
50%	1.18	Open Water	=	1.3 %
95%	3.39	No Data	=	50.0 %

Filename: [illegible] draft % Distance [illegible]



Experiment: BCD2000902
Instrument: IPS4–1013

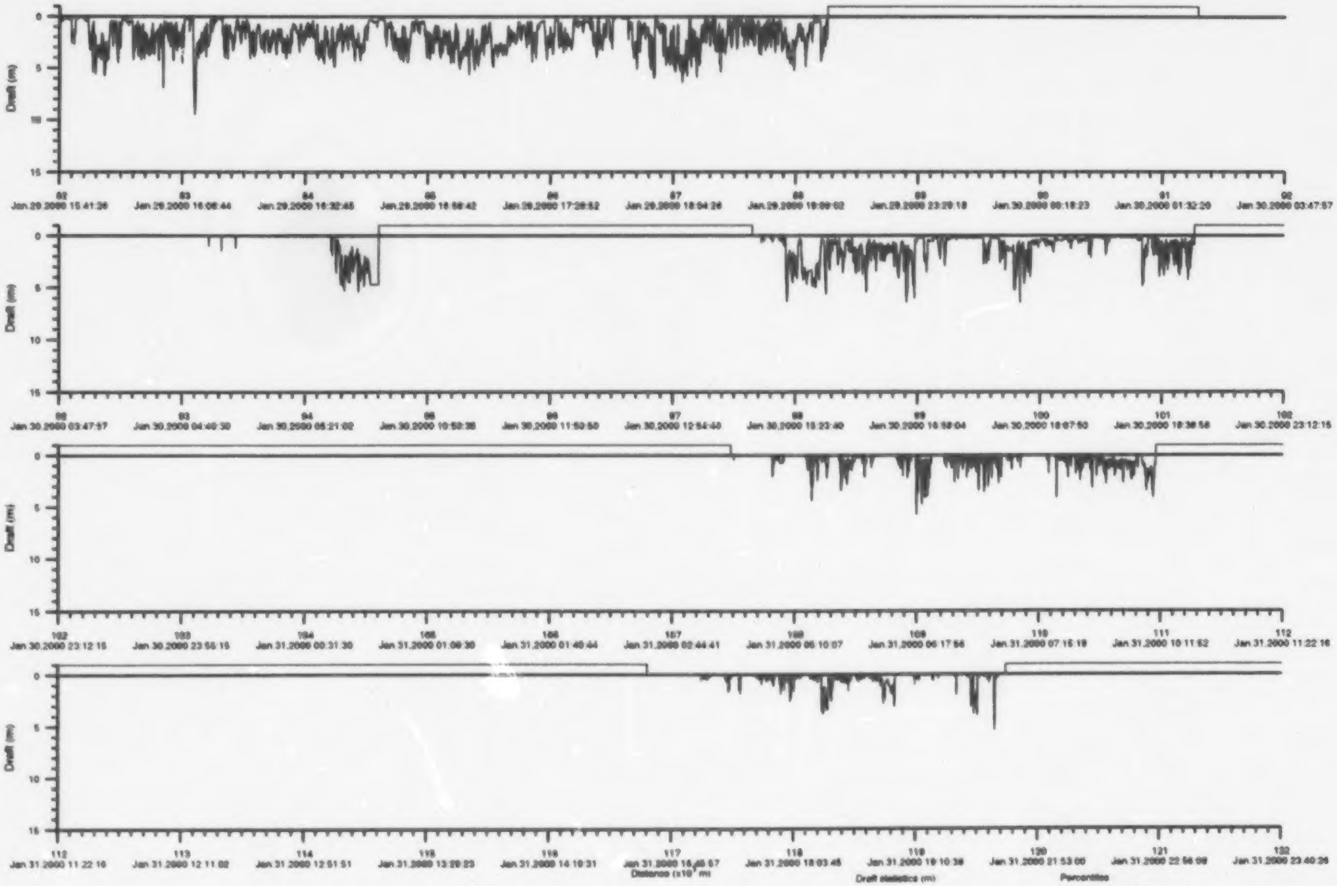
Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance
Date: 2000/01/28 01:04:47.18 to 2000/01/29 15:41:25.62 GMT

Draft statistics (m):

Mean = 1.46
Min = 0.60
Max = 7.36
StdDev = 1.06

Percentiles

5% : 0.24 Ice = 81.2 %
50% : 1.20 Open Water = 0.0 %
95% : 3.61 No Data = 18.8 %



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/01/29 15:41:25.62 to 2000/01/31 23:40:26.45 GMT

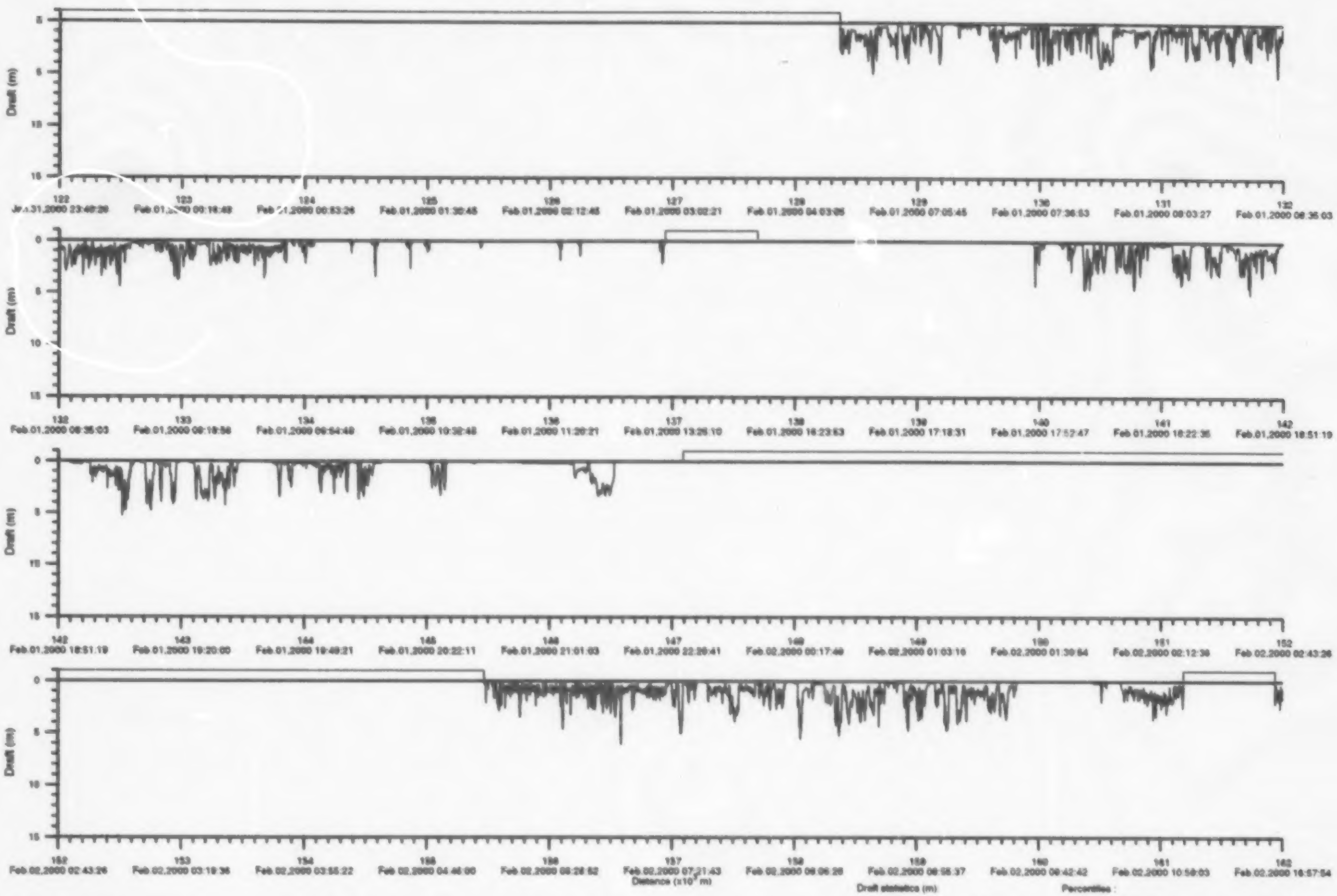
Draft statistics (m)

Mean	=	1.48
Min	=	0.00
Max	=	9.49
StdDev	=	1.32

Percentiles

5%	0.16	Ice	=	36.9 %
50%	1.06	Open Water	=	12.1 %
95%	4.04	No Data	=	51.0 %

Filename pe0100ips11 draft N Distance dat



Draft statistics (m)

Mean = 1.11
Min = 0.00
Max = 6.11
StdDev = 0.96

Percentiles :

5% : 0.16 Ice = 52.1 %
50% : 0.82 Open Water = 7.3 %
95% : 3.16 No Data = 40.6 %

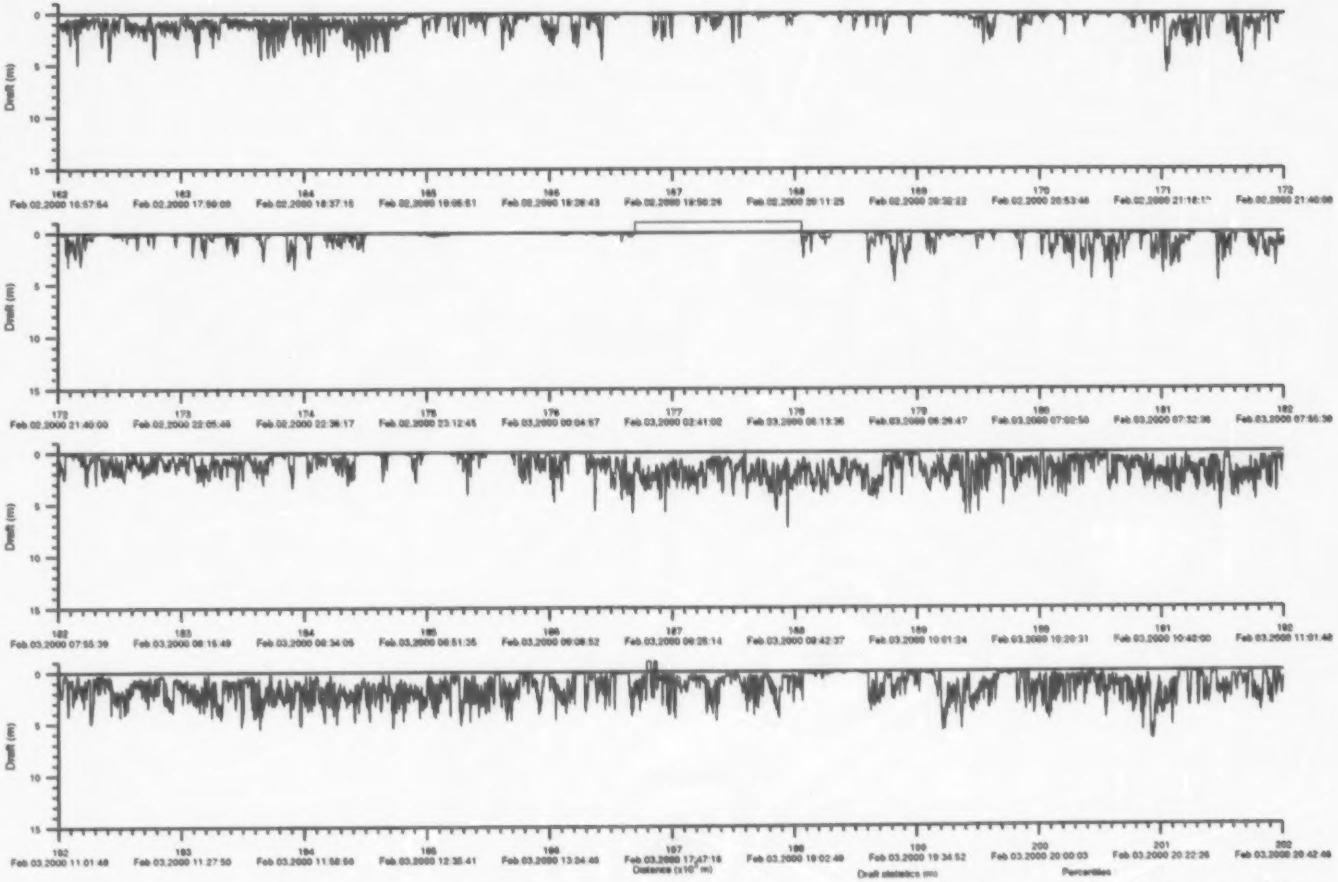
Filename: pcd000ps13_draft_N_Distance.dat

Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/01/31 23:40:26.45 to 2000/02/02 16:57:54.08 GMT



Draft statistics (m)

Mean = 1.22
Min = 0.00
Max = 7.31
StdDev = 1.06

Percentiles

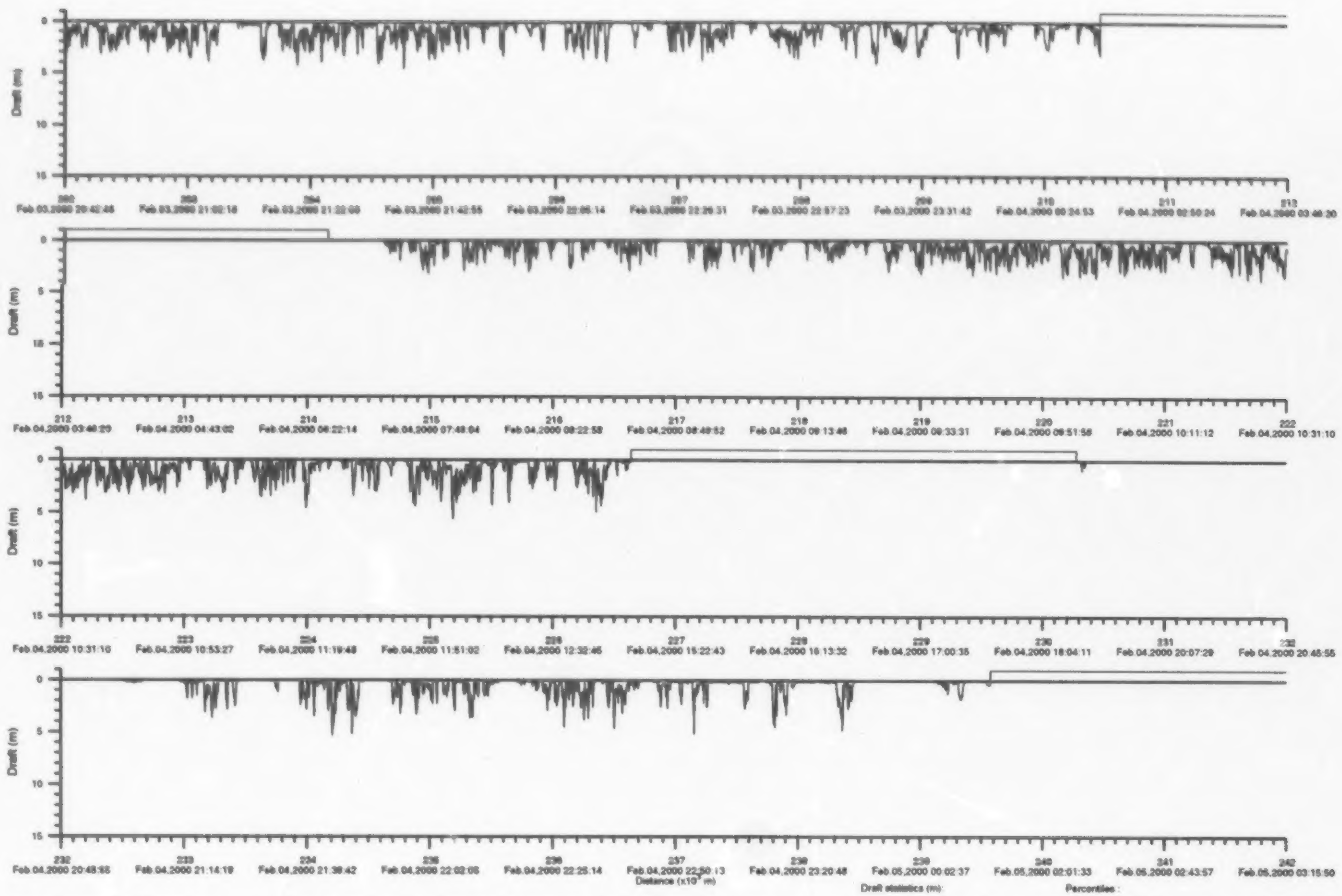
5% 0.16 Ice = 94.8 %
50% 0.91 Open Water = 1.7 %
95% 3.31 No Data = 3.5 %

Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/02 16:57:54.08 to 2000/02/03 20:42:45.54 GMT



Draft statistics (m):

Mean = 0.90
Min = -0.00
Max = 5.60
StdDev = 0.85

Percentiles :

5% : 0.11 Ice = 59.2 %
50% : 0.58 Open Water = 16.4 %
95% : 2.66 No Data = 24.4 %

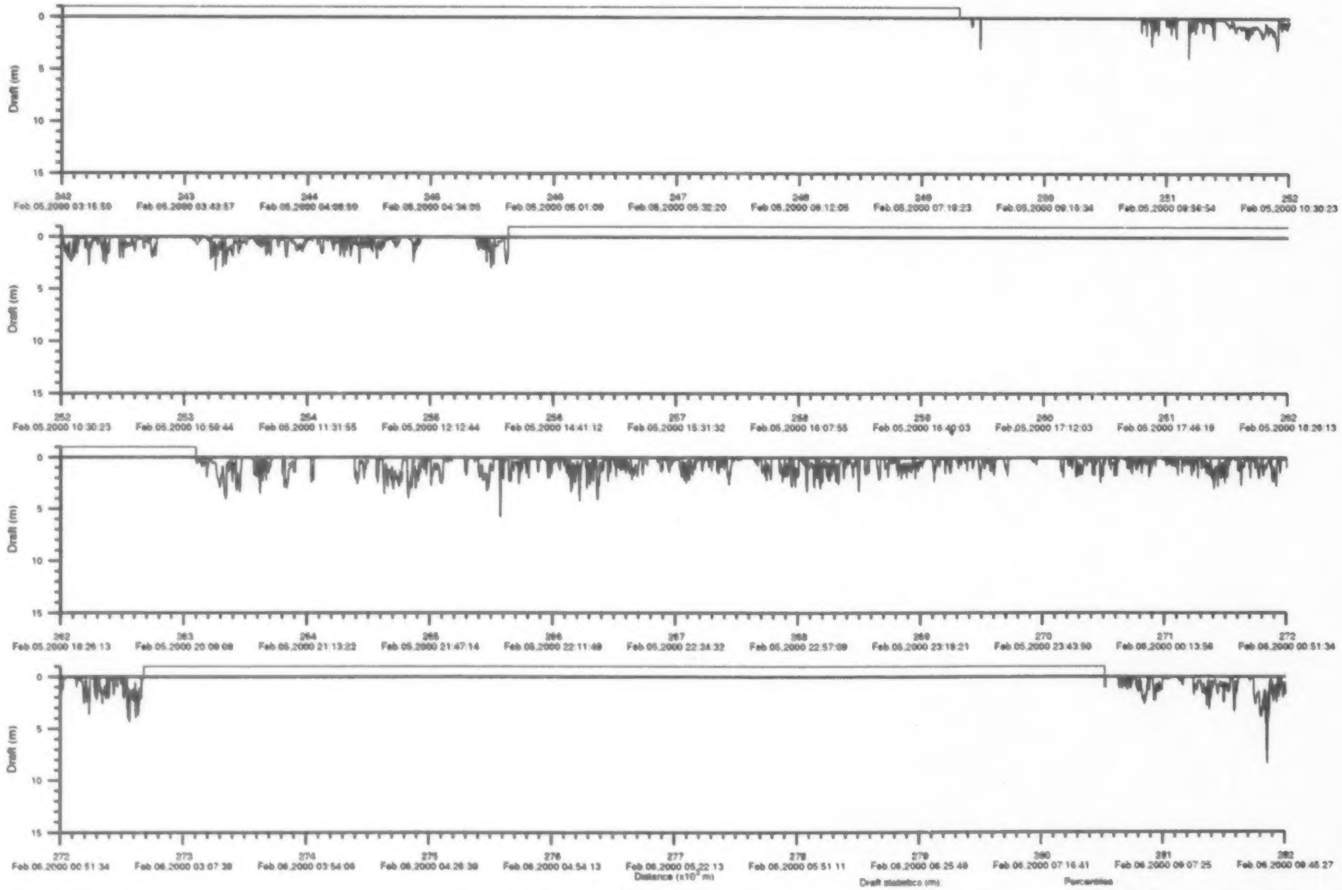
Filename: [illegible]

Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/03 20:42:45.54 to 2000/02/05 03:15:50.32 GMT



Draft statistics (m)

Mean	=	0.80
Min	=	0.00
Max	=	8.42
StdDev	=	0.73

Percentiles

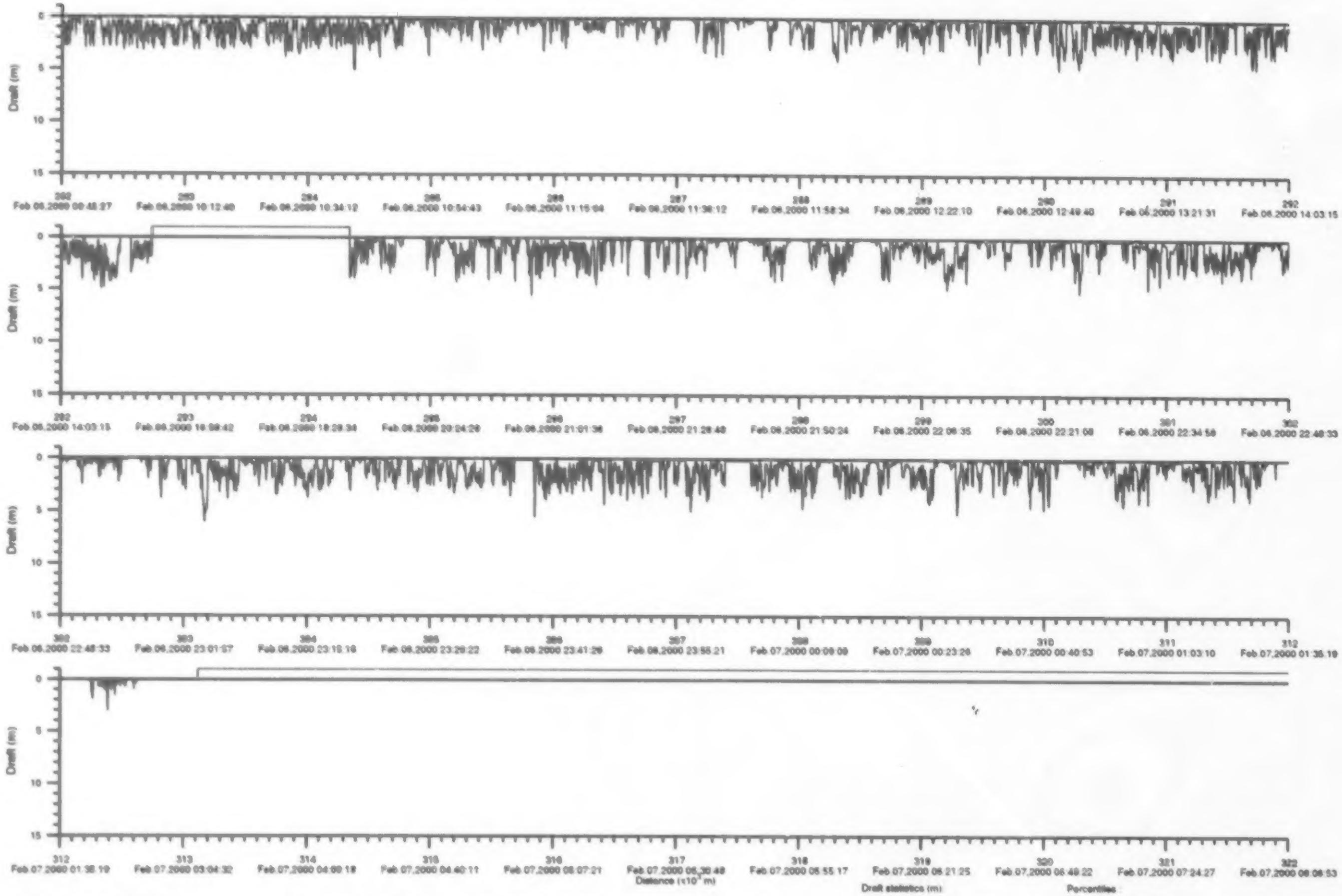
5%	0.08	Ice	=	33.4 %
50%	0.58	Open Water	=	10.1 %
95%	2.23	No Data	=	56.5 %

Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/05 03:15:50.32 to 2000/02/06 09:45:27.00 GMT



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/06 09:45:27.00 to 2000/02/07 08:06:53.25 GMT

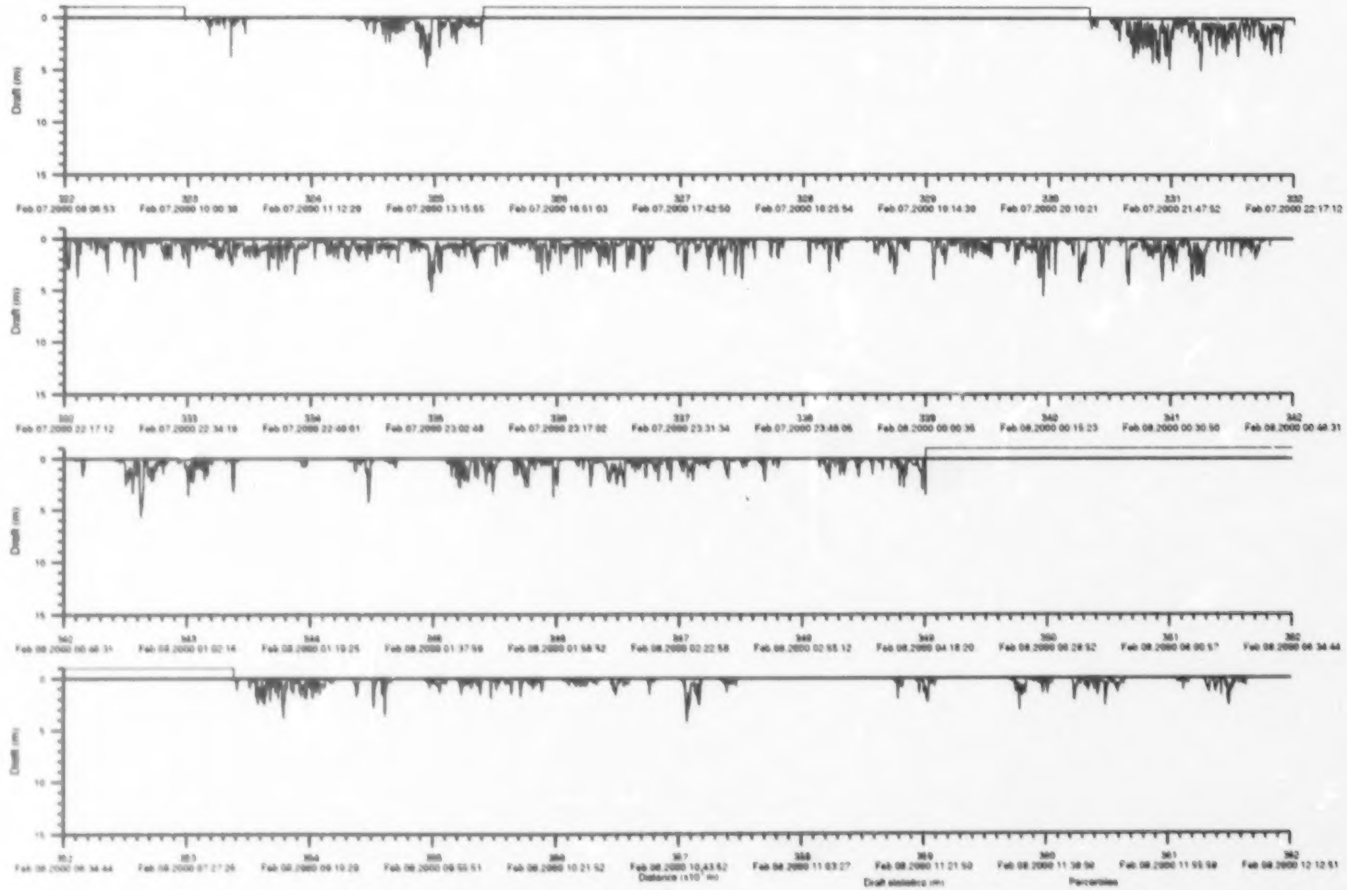
Draft statistics (m)

Mean = 1.03
Min = -0.00
Max = 6.04
StdDev = 0.98

Percentiles :

5% :	0.11	Ice	=	69.3 %
50% :	0.69	Open Water	=	4.5 %
95% :	2.93	No Data	=	26.2 %

Filename psd2000ips13 draft N Distance dat



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

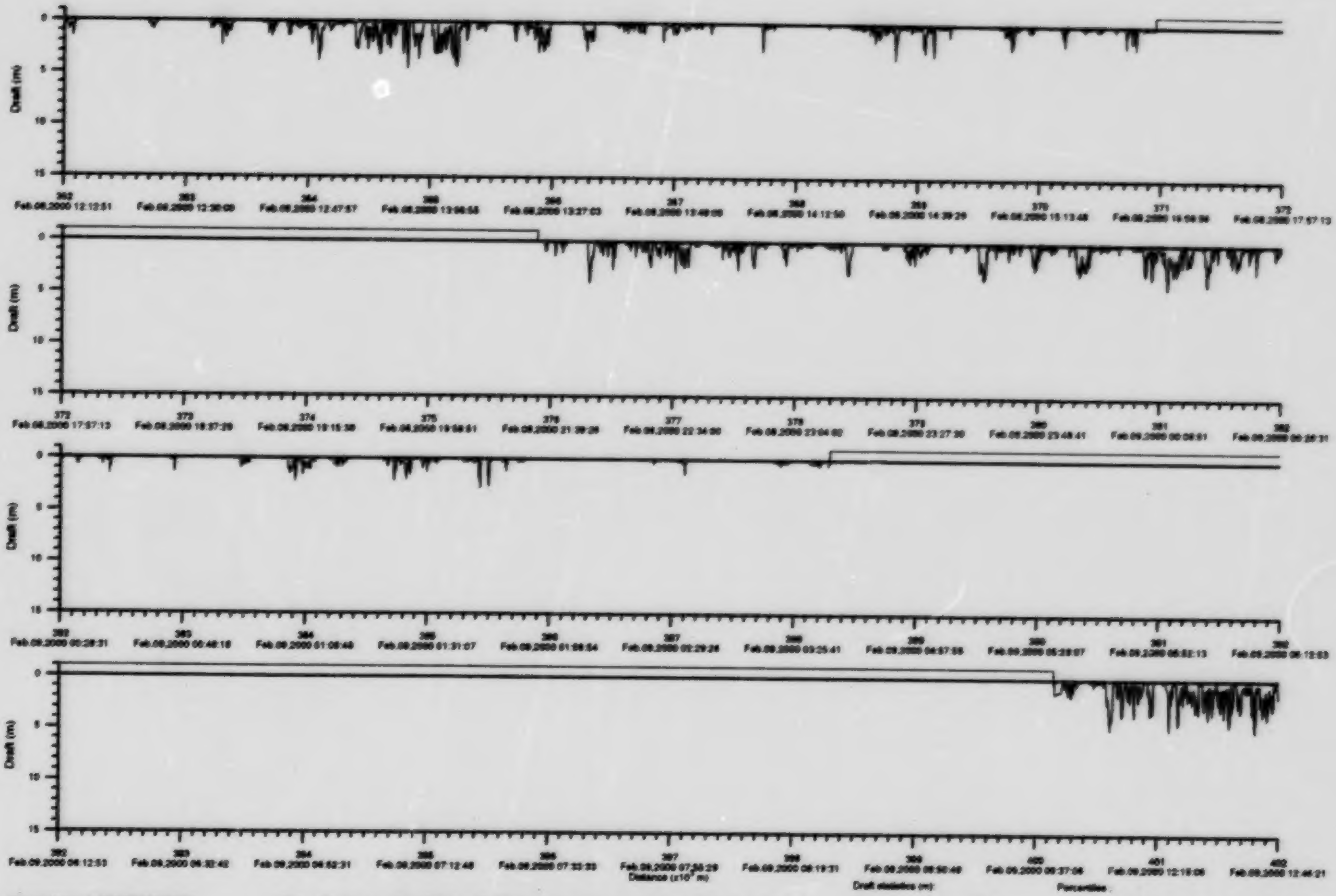
Date: 2000/02/07 08:06:53.25 to 2000/02/08 12:12:51.38 GMT

Draft statistics (m)

Mean = 0.70
Min = 0.00
Max = 5.73
StdDev = 0.71

Percentiles

5% 0.09 Ice = 55.9%
50% 0.46 Open Water = 18.4%
95% 2.28 No Data = 25.7%



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

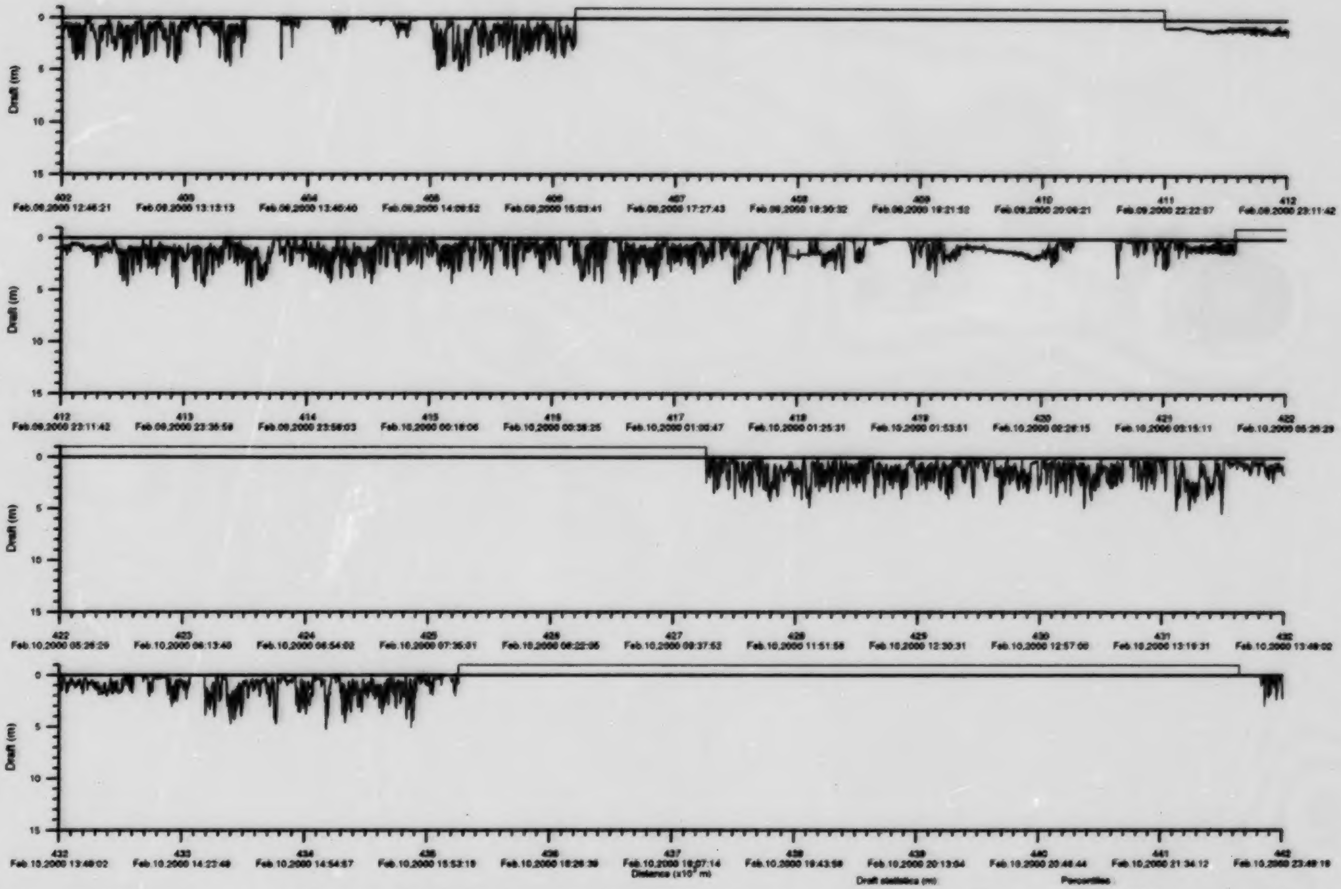
Date: 2000/02/08 12:12:51.38 to 2000/02/09 12:46:20.54 GMT

Draft statistics (m):

Mean = 0.66
Min = 0.01
Max = 5.06
StdDev = 0.76

Percentiles :

5% : 0.08 Ice = 34.8%
50% : 0.33 Open Water = 23.3%
95% : 2.35 No Data = 42.0%



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/09 12:46:20.54 to 2000/02/10 23:49:19.07 GMT

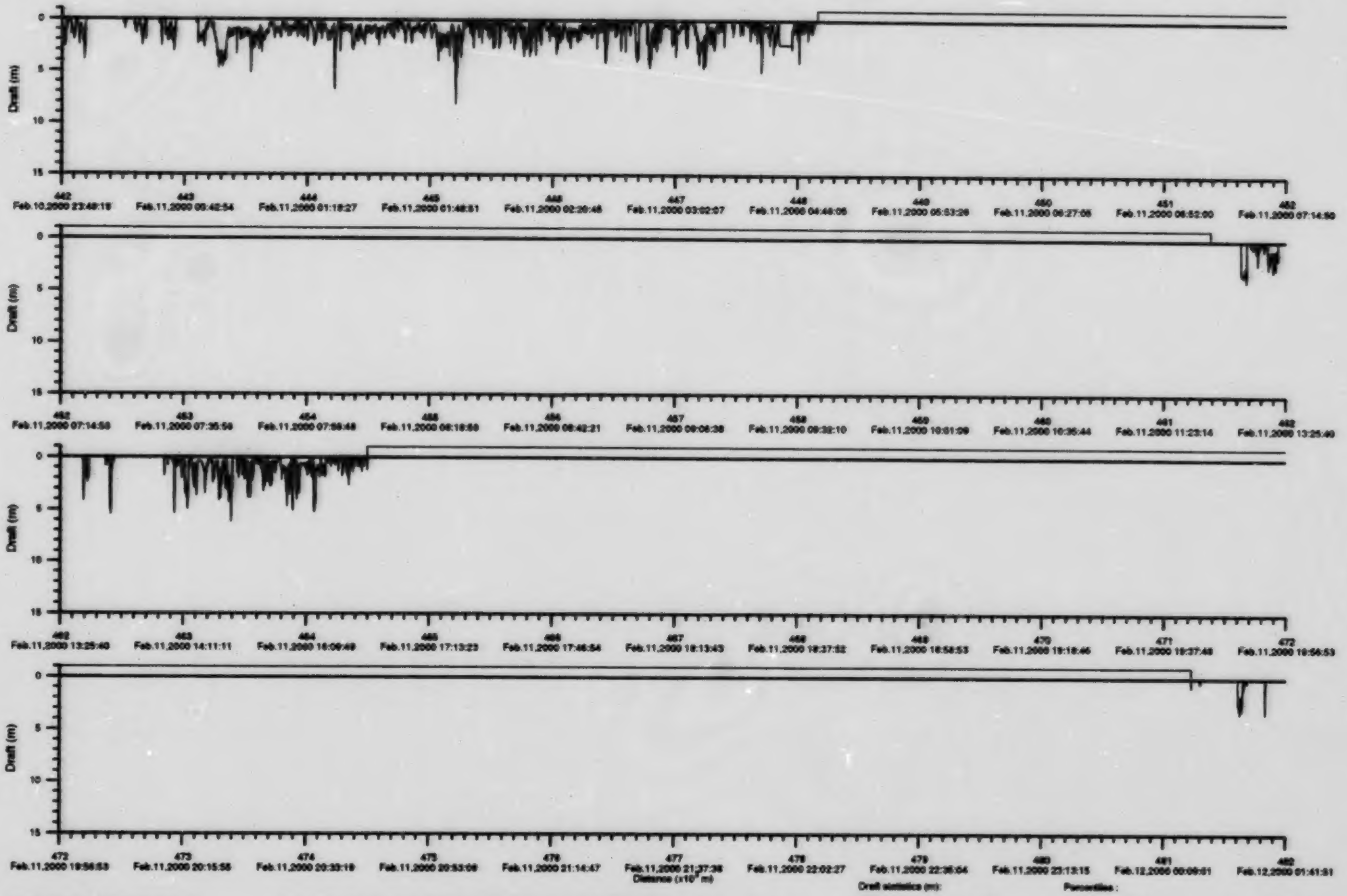
Draft statistics (m)

Mean = 1.29
Min = 0.00
Max = 5.48
StdDev = 0.94

Percentiles

5% 0.17 Ice = 52.8 %
50% 1.06 Open Water = 4.9 %
95% 3.25 No Data = 42.2 %

Filename: pa2000ps13 draft. fr. Distance.dat



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/10 23:49:19.07 to 2000/02/12 01:41:51.05 GMT

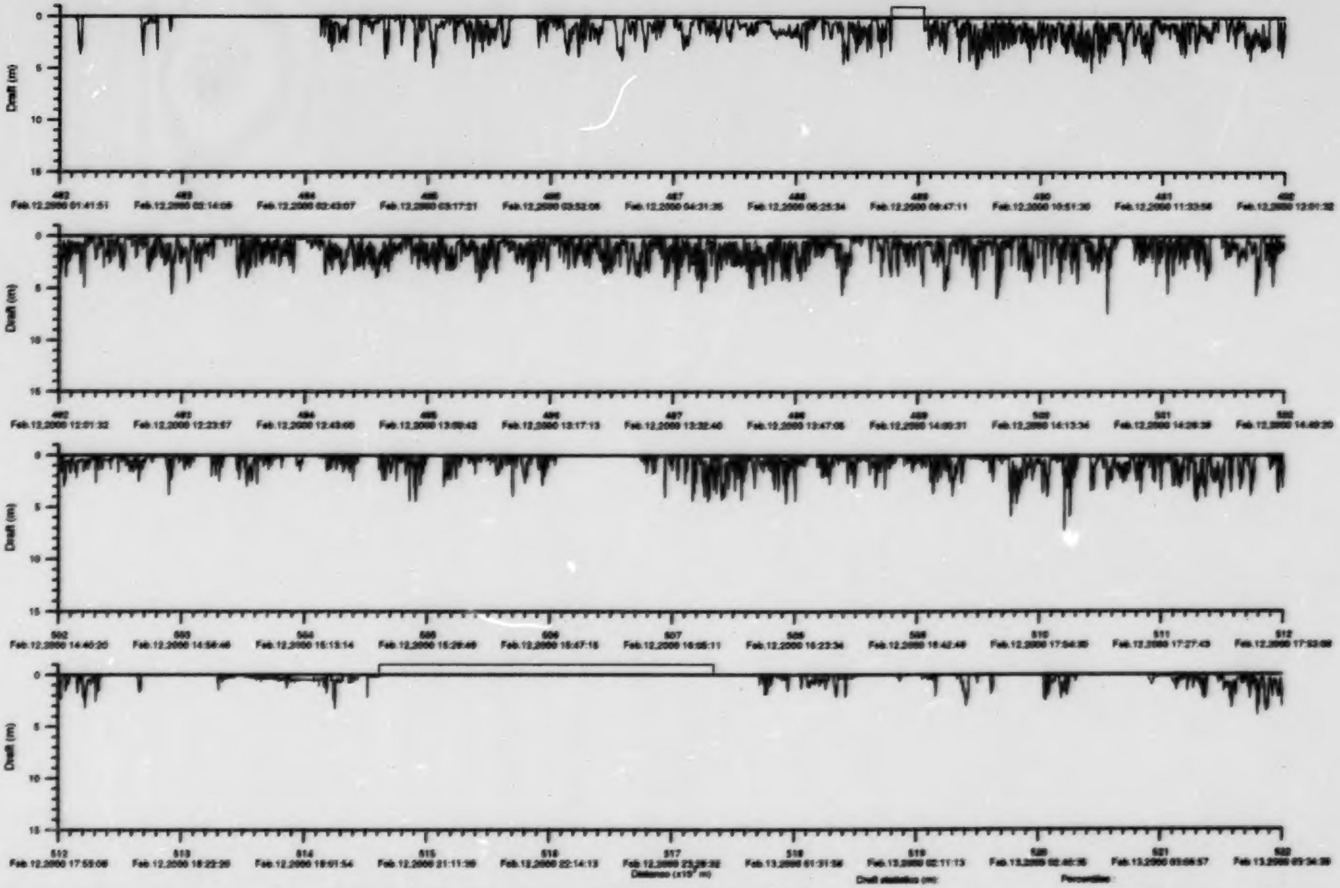
Draft statistics (m):

Mean	=	1.15
Min	=	0.00
Max	=	8.15
StdDev	=	0.97

Percentiles :

5% :	0.14	Ice	=	19.4%
50% :	0.89	Open Water	=	5.7%
95% :	3.14	No Data	=	74.9%

Filename: pei2000ips13_draft_H_Distance.dat



Experiment: BCD2000902
Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance
Date: 2000/02/12 01:41:51.05 to 2000/02/13 03:34:39.20 GMT

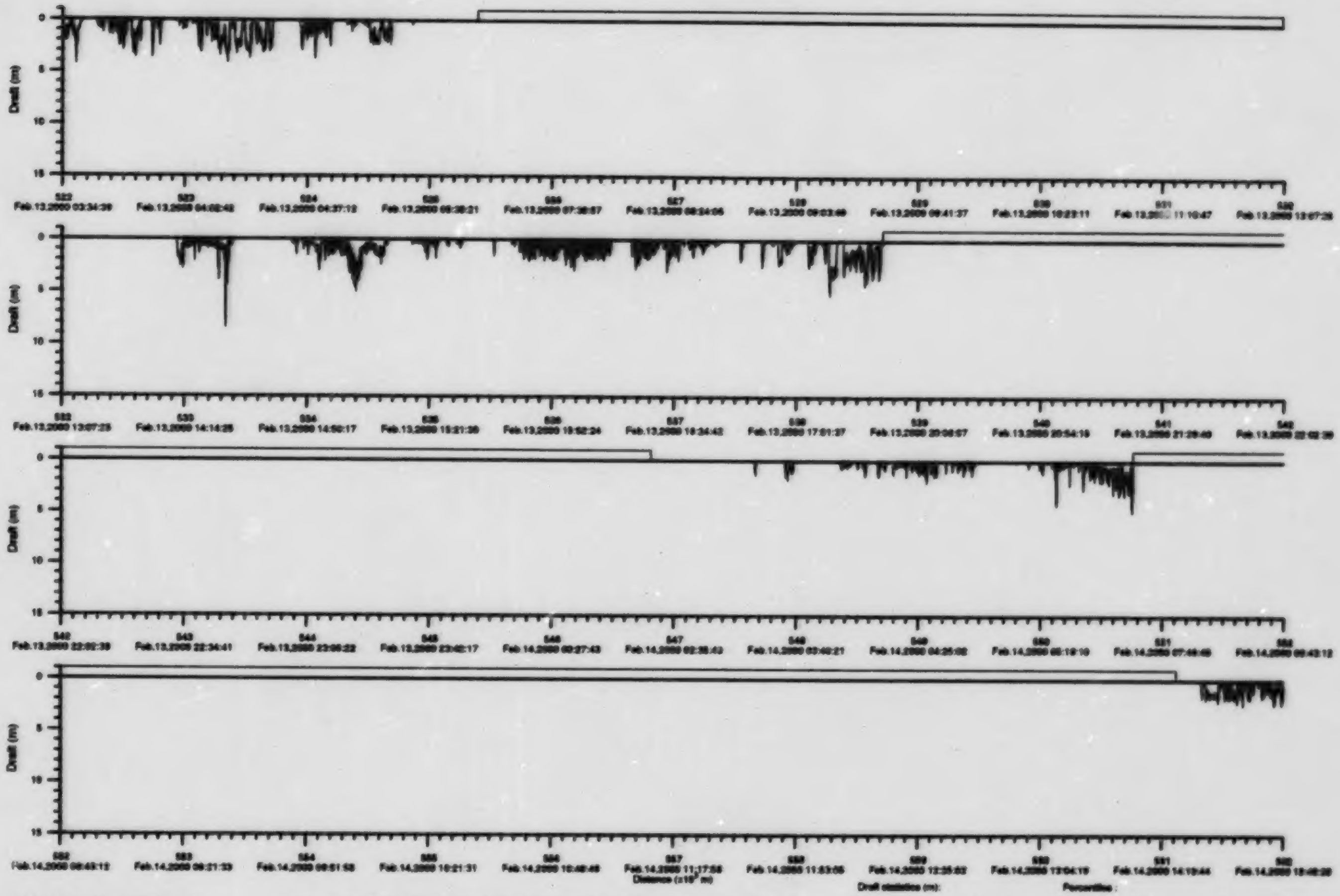
Draft statistics (m):

Mean = 1.08
Min = 0.00
Max = 7.43
StdDev = 0.97

Percentiles:

5%	0.11	Ice	=	75.4%
50%	0.78	Open Water	=	17.1%
95%	3.00	No Data	=	7.5%

[illegible]



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

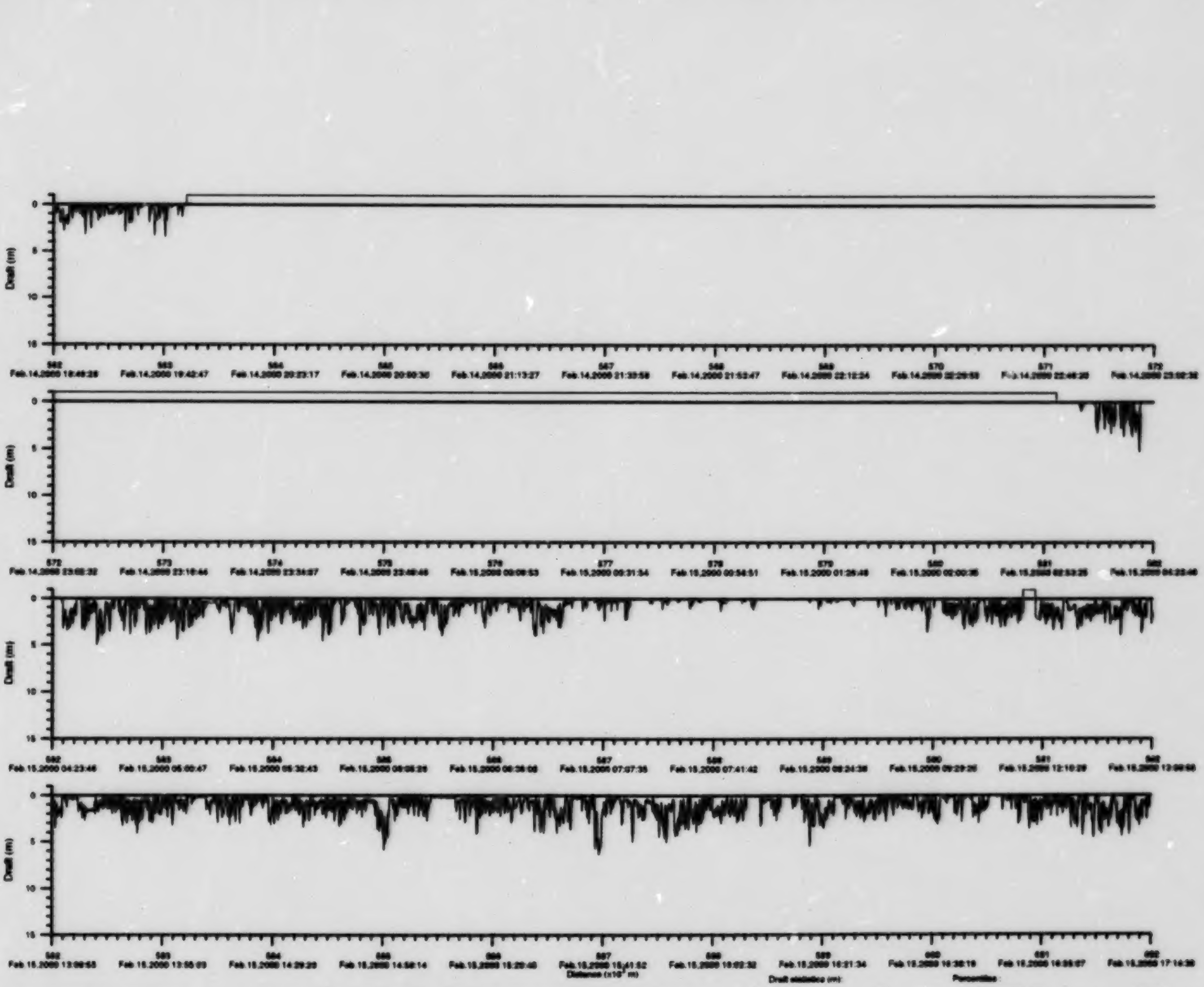
Date: 2000/02/13 03:34:39.20 to 2000/02/14 18:49:28.24 GMT

Draft statistics (m):

Mean = 0.87
Min = 0.00
Max = 8.48
StdDev = 0.84

Percentiles :

5% : 0.08 Ice = 22.4%
50% : 0.58 Open Water = 15.0%
95% : 2.00 No Data = 62.7%



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

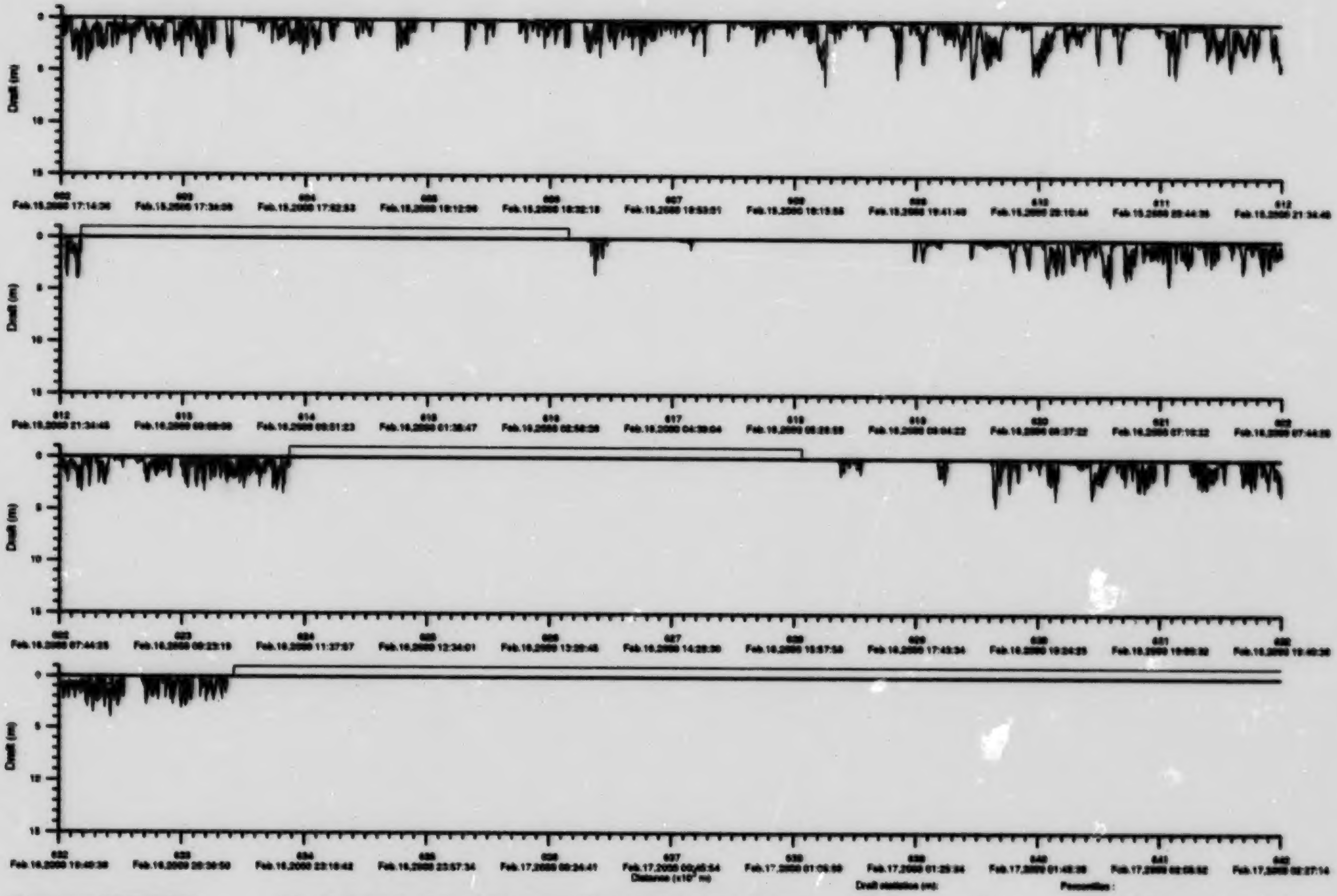
Date: 2000/02/14 18:49:28.24 to 2000/02/15 17:14:30.16 GMT

Draft statistics (m):

Mean = 1.08
Min = 0.01
Max = 6.34
StdDev = 0.92

Percentiles :

5%: 0.13 Ice = 47.8%
50%: 0.78 Open Water = 7.2%
95%: 2.86 No Data = 45.0%



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

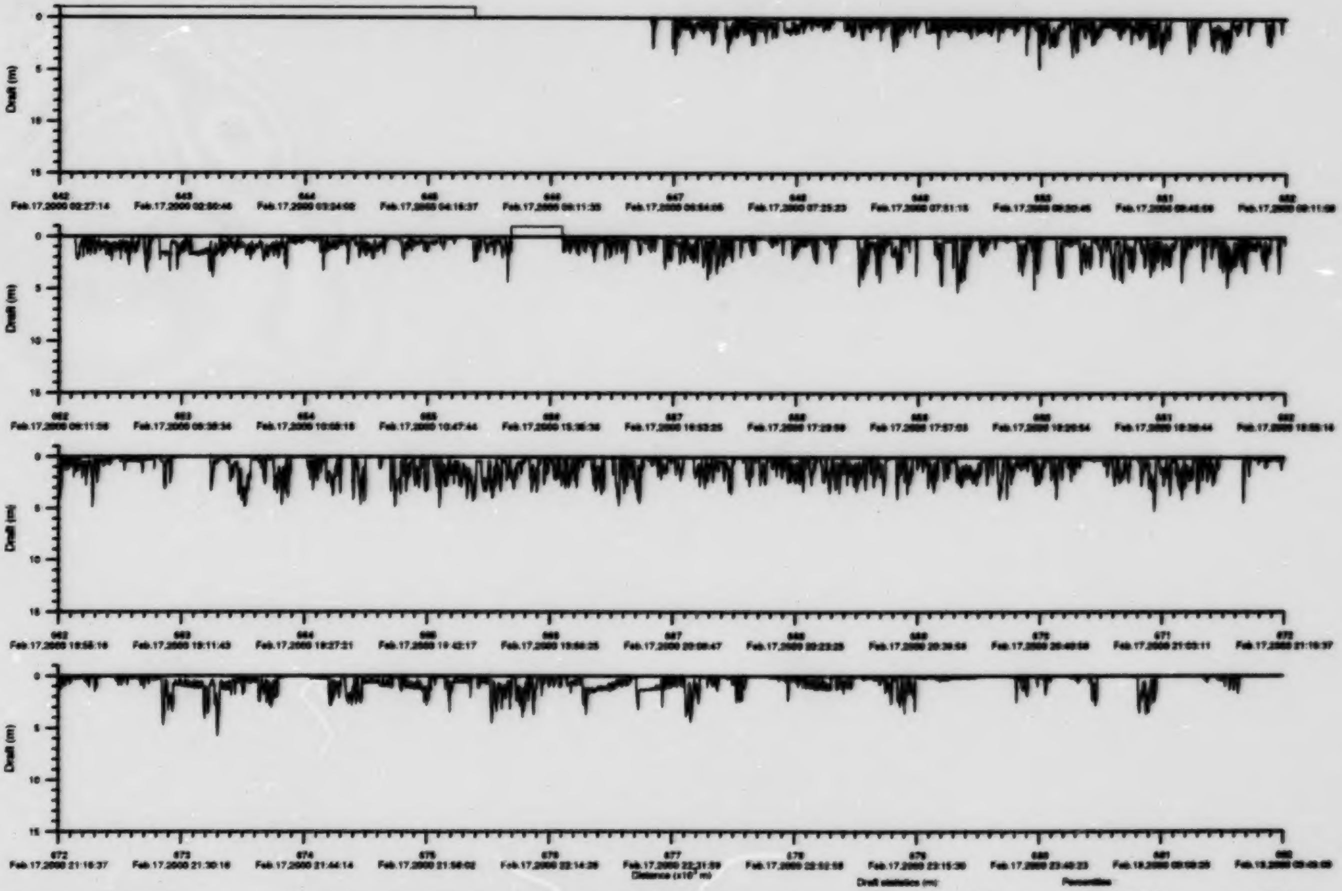
Date: 2000/02/15 17:14:30.16 to 2000/02/17 02:27:14.27 GMT

Draft statistics (m):

Mean = 0.84
Min = 0.00
Max = 9.24
StdDev = 0.88

Percentiles :

5% : 0.12 Ice = 43.3%
50% : 0.61 Open Water = 14.8%
95% : 2.82 No Data = 41.9%



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

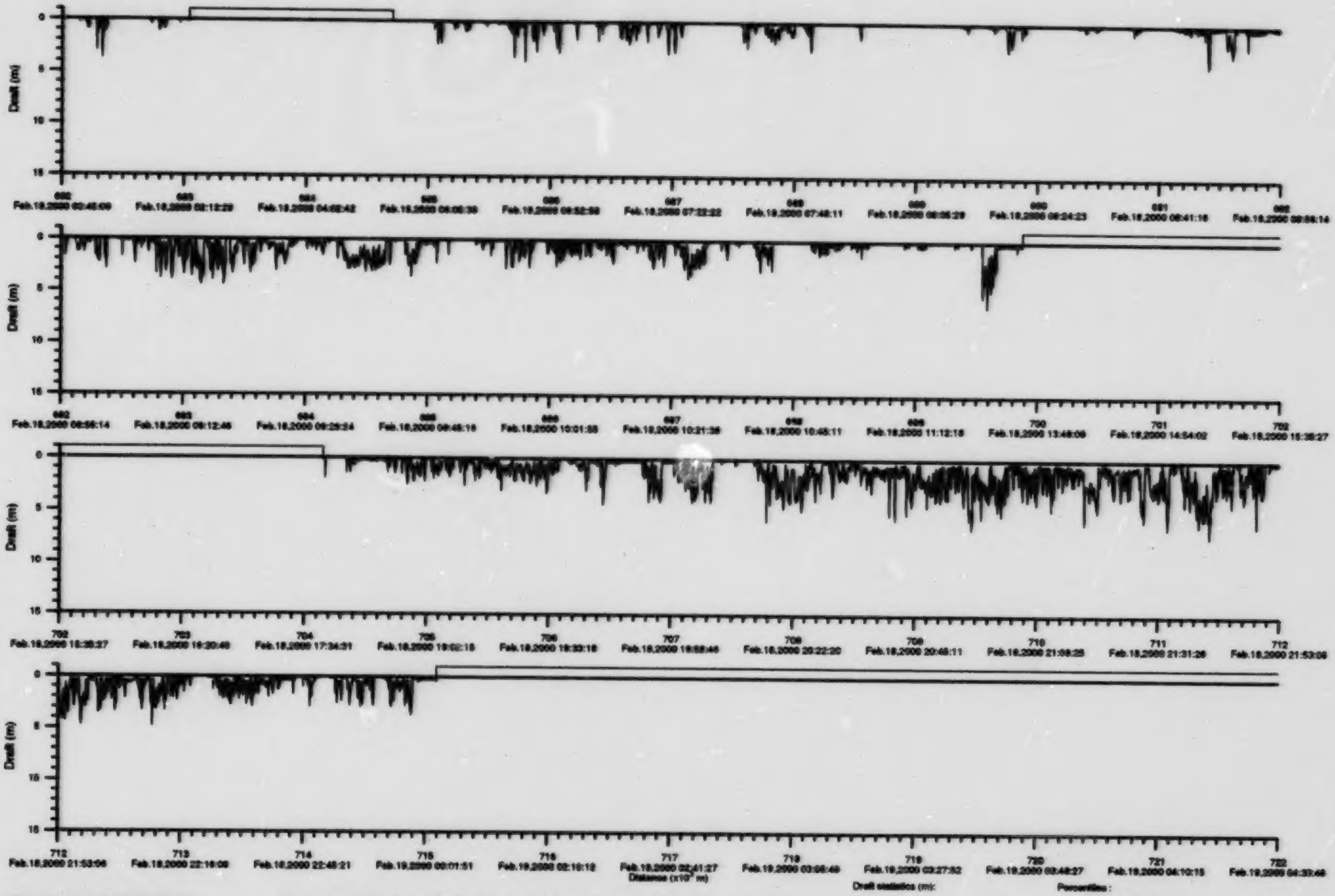
Date: 2000/02/17 02:27:14.27 to 2000/02/18 00:45:08.52 GMT

Draft statistics (m):

Mean = 0.88
Min = 0.00
Max = 5.73
StdDev = 0.83

Percentiles

5% : 0.11 Ice = 79.7%
50% : 0.63 Open Water = 10.8%
95% : 2.61 No Data = 9.5%



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/18 00:45:08.52 to 2000/02/19 04:33:46.48 GMT

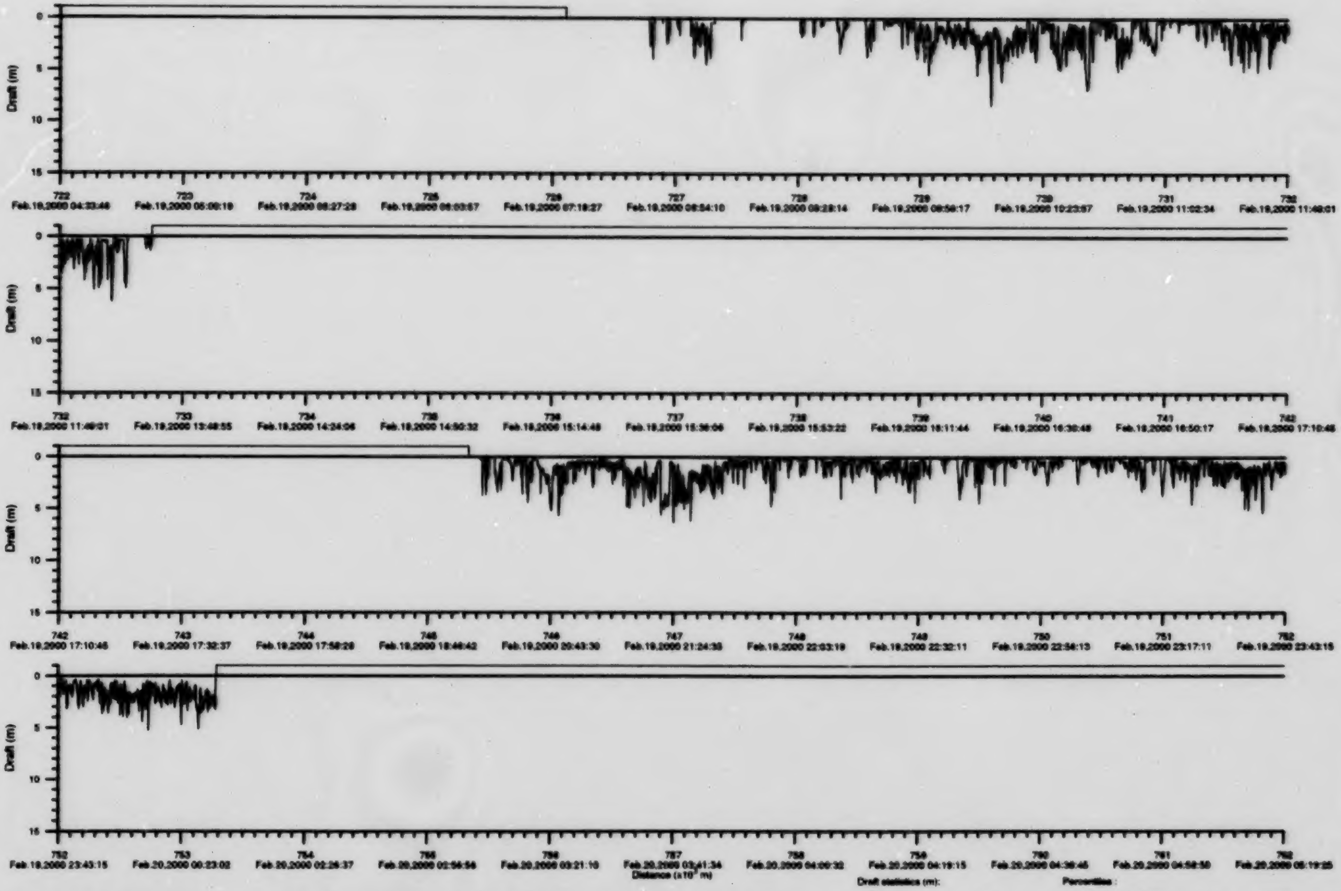
Draft statistics (m):

Mean = 0.84
Min = 0.00
Max = 7.35
StdDev = 1.02

Percentiles :

5% : 0.00 Ice = 51.1%
50% : 0.50 Open Water = 16.8%
95% : 3.06 No Data = 32.1%

Filename: ps2000ips13_draft_N_Distance.dat



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/19 04:33:46.48 to 2000/02/20 05:19:25.27 GMT

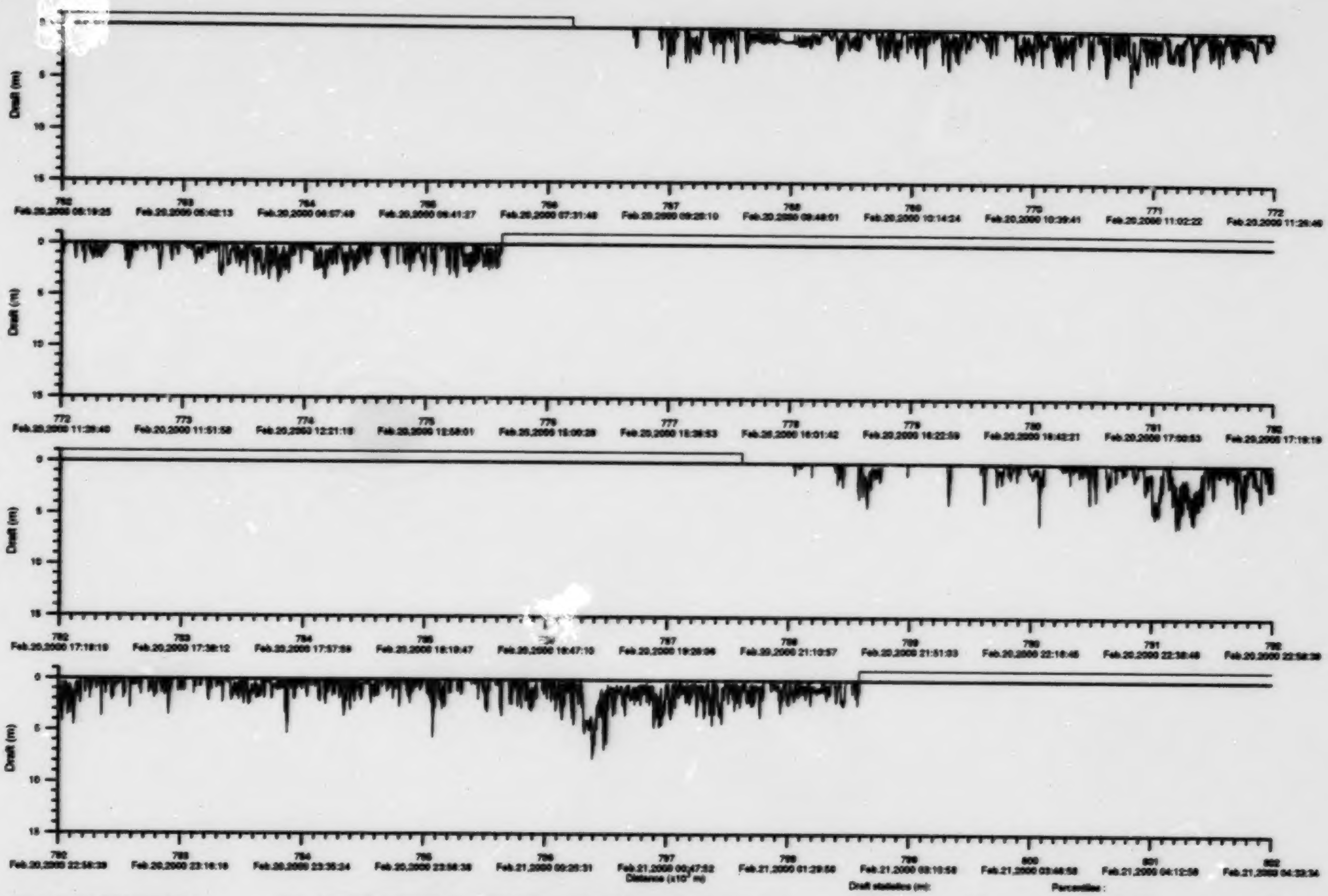
Draft statistics (m):

Mean = 1.32
Min = 0.00
Max = 8.41
StdDev = 1.13

Percentiles :

5% : 0.12 Ice = 30.3%
50% : 1.01 Open Water = 6.2%
95% : 3.57 No Data = 63.5%

Filename: [illegible]



Draft statistics (m):

Mean = 1.03
Min = 0.01
Max = 7.71
StdDev = 0.95

Percentiles :

5% : 0.12 Ice = 41.4%
50% : 0.74 Open Water = 9.6%
95% : 2.95 No Data = 49.0%

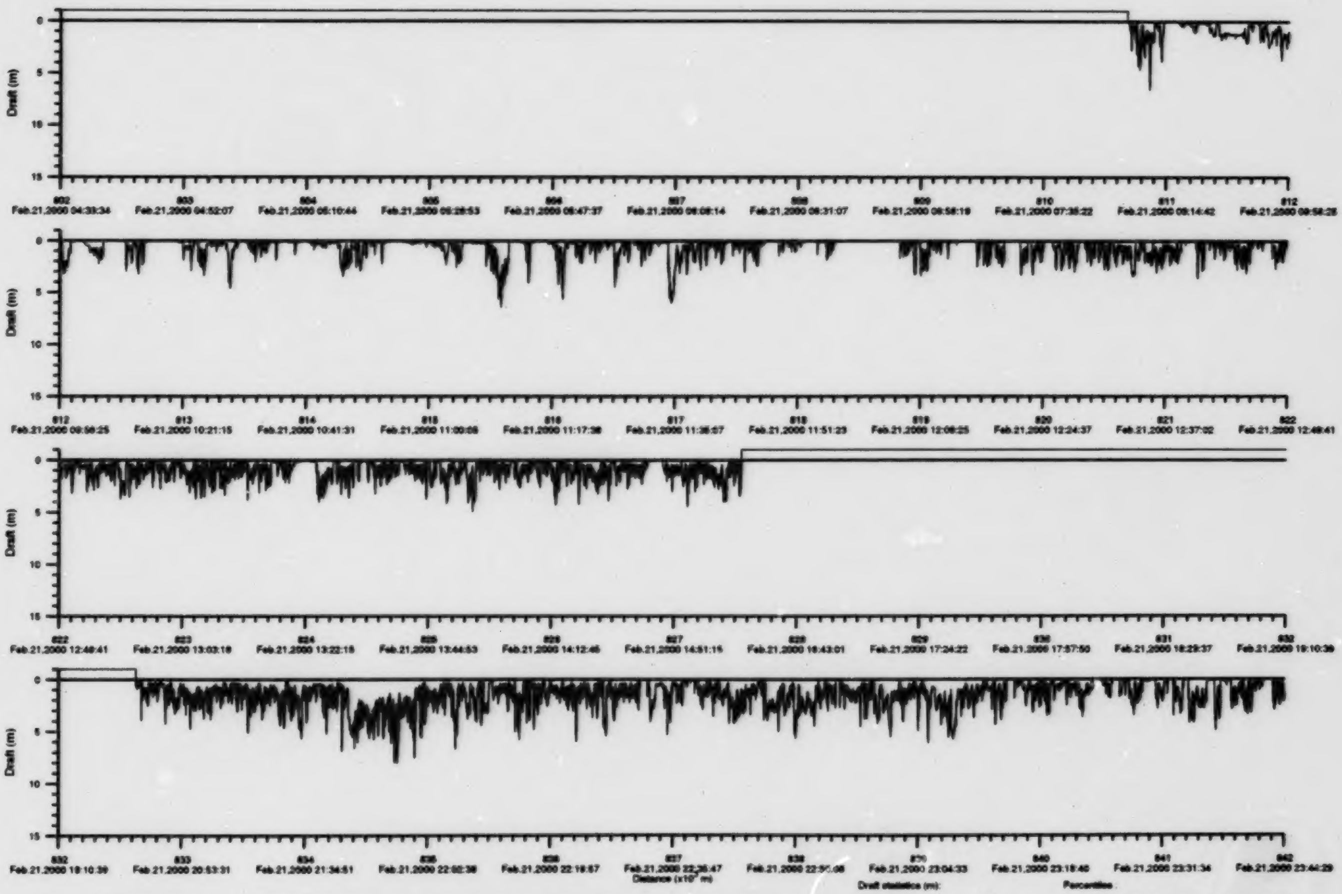
Filename: [illegible]

Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/20 05:19:25.27 to 2000/02/21 04:33:33.98 GMT



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/21 04:33:33.98 to 2000/02/21 23:44:28.84 GMT

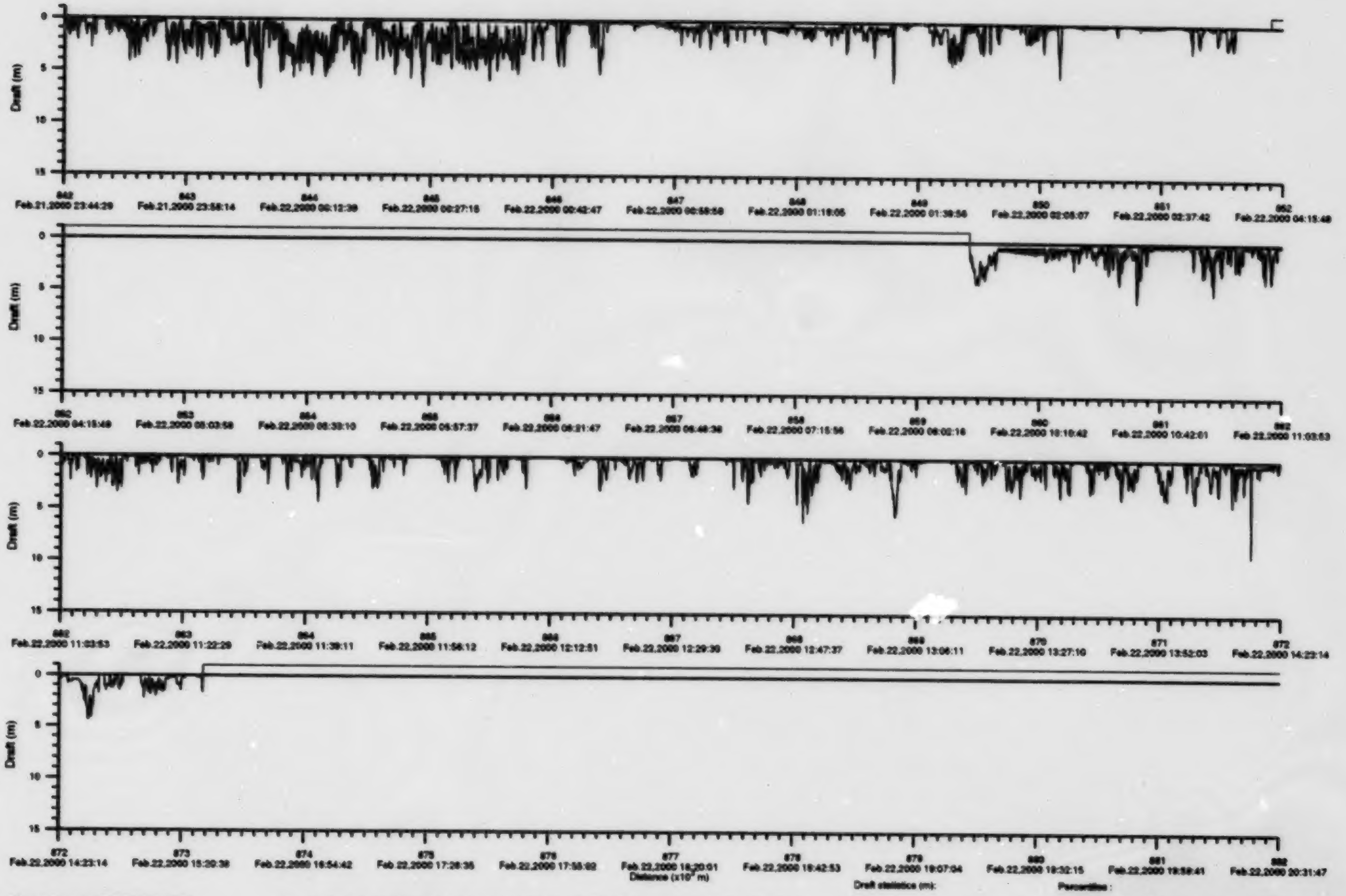
Draft statistics (m):

Mean = 1.20
Min = -0.01
Max = 8.04
StdDev = 1.07

Percentiles :

5% : 0.12 Ice = 57.8%
50% : 0.82 Open Water = 7.8%
95% : 3.32 No Data = 34.4%

Filename: pn2000ips13_draft_R_Distance.dat



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/21 23:44:28.84 to 2000/02/22 20:31:47.27 GMT

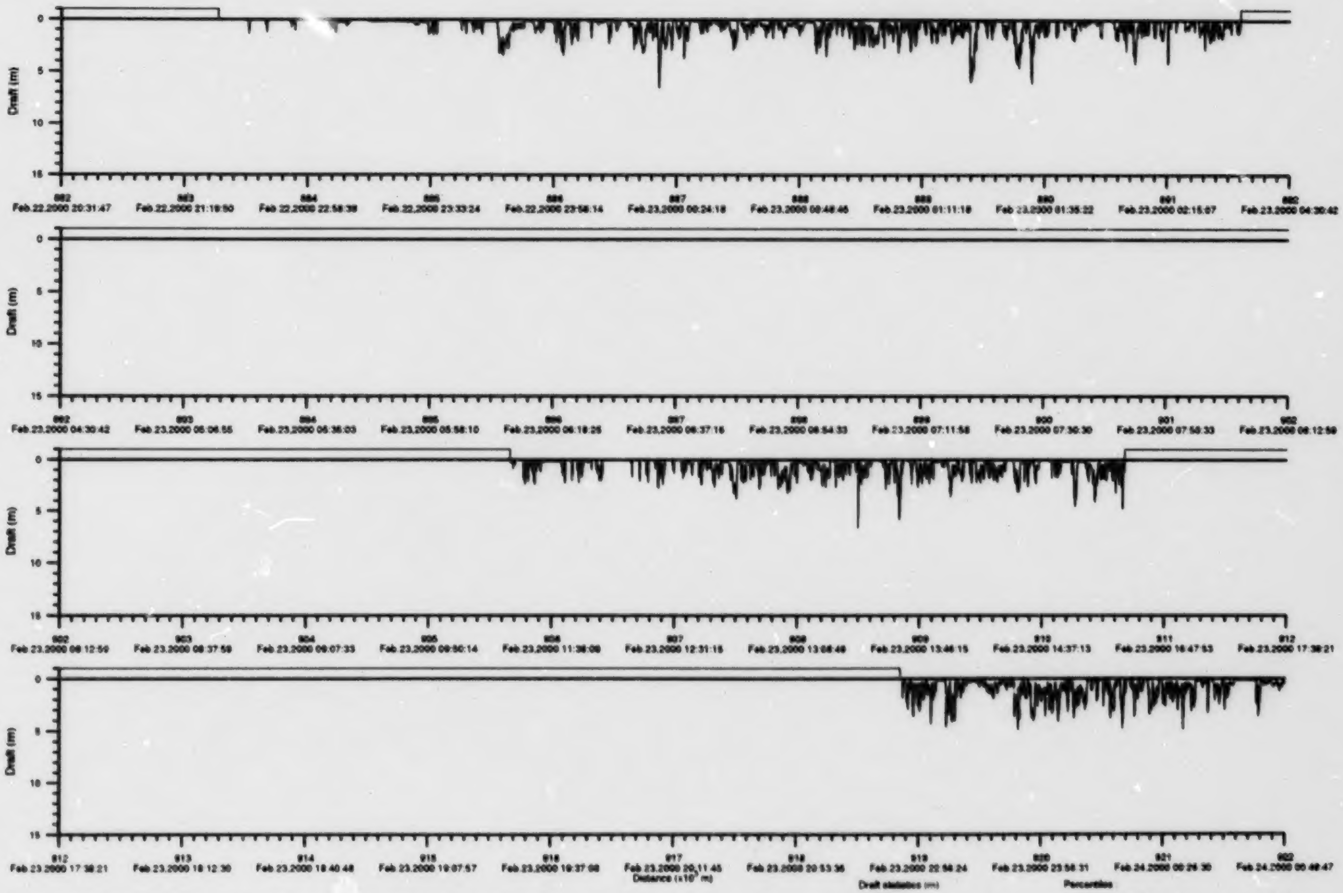
Draft statistics (m):

Mean = 0.85
Min = 0.01
Max = 9.27
StdDev = 1.02

Percentiles :

5% : 0.13 Ice = 53.0%
50% : 0.55 Open Water = 6.2%
95% : 3.16 No Data = 40.9%

Filename: [illegible]



Draft statistics (m)

Mean	=	0.82
Min	=	0.00
Max	=	6.64
StdDev	=	0.64

Percentiles

5%	0.13	Ice	=	36.4 %
50%	0.52	Open Water	=	5.8 %
95%	2.56	No Data	=	58.8 %

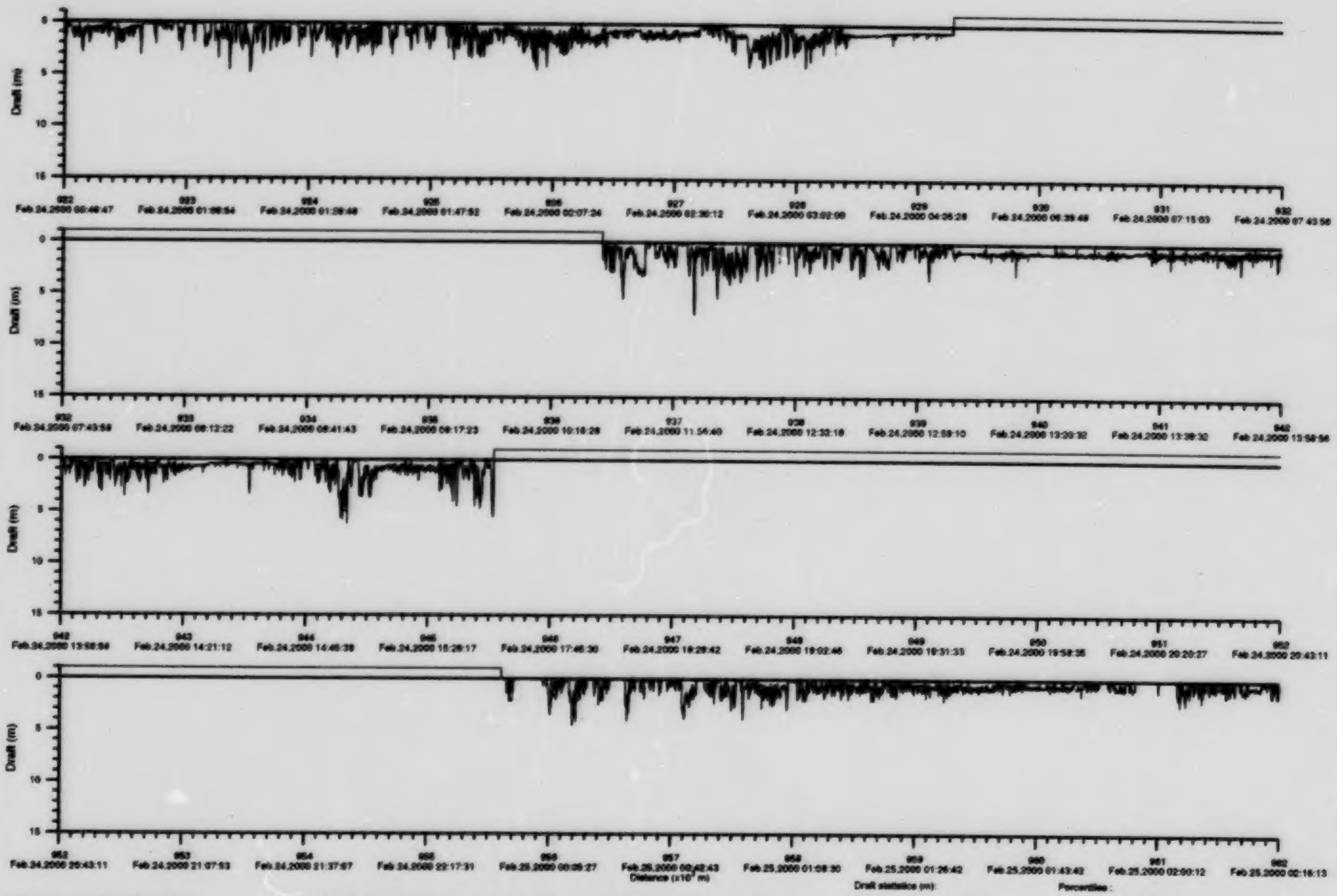
Filename: ped2000ips13 draft % Distance.dat

Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/22 20:31:47.27 to 2000/02/24 00:49:47.01 GMT



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/24 00:49:47.01 to 2000/02/25 02:16:13.03 GMT

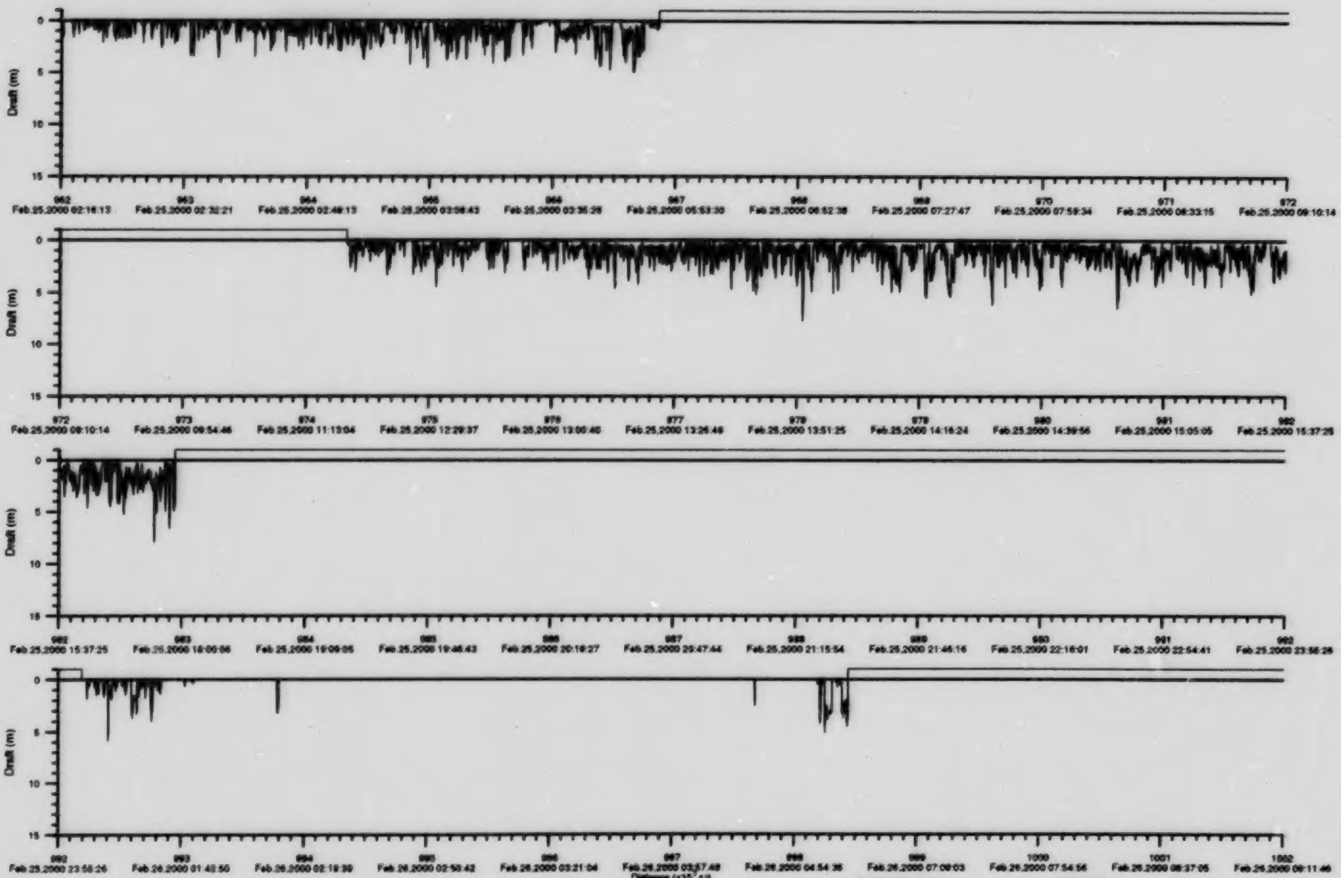
Draft statistics (m):

Mean = 0.94
Min = -0.01
Max = 6.96
StdDev = 0.71

Percentiles :

5% :	0.16	Ice	=	54.5 %
50% :	0.80	Open Water	=	2.5 %
95% :	2.38	No Data	=	43.0 %

Filename: ped2000ips13_draft_H_Distance.dat



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

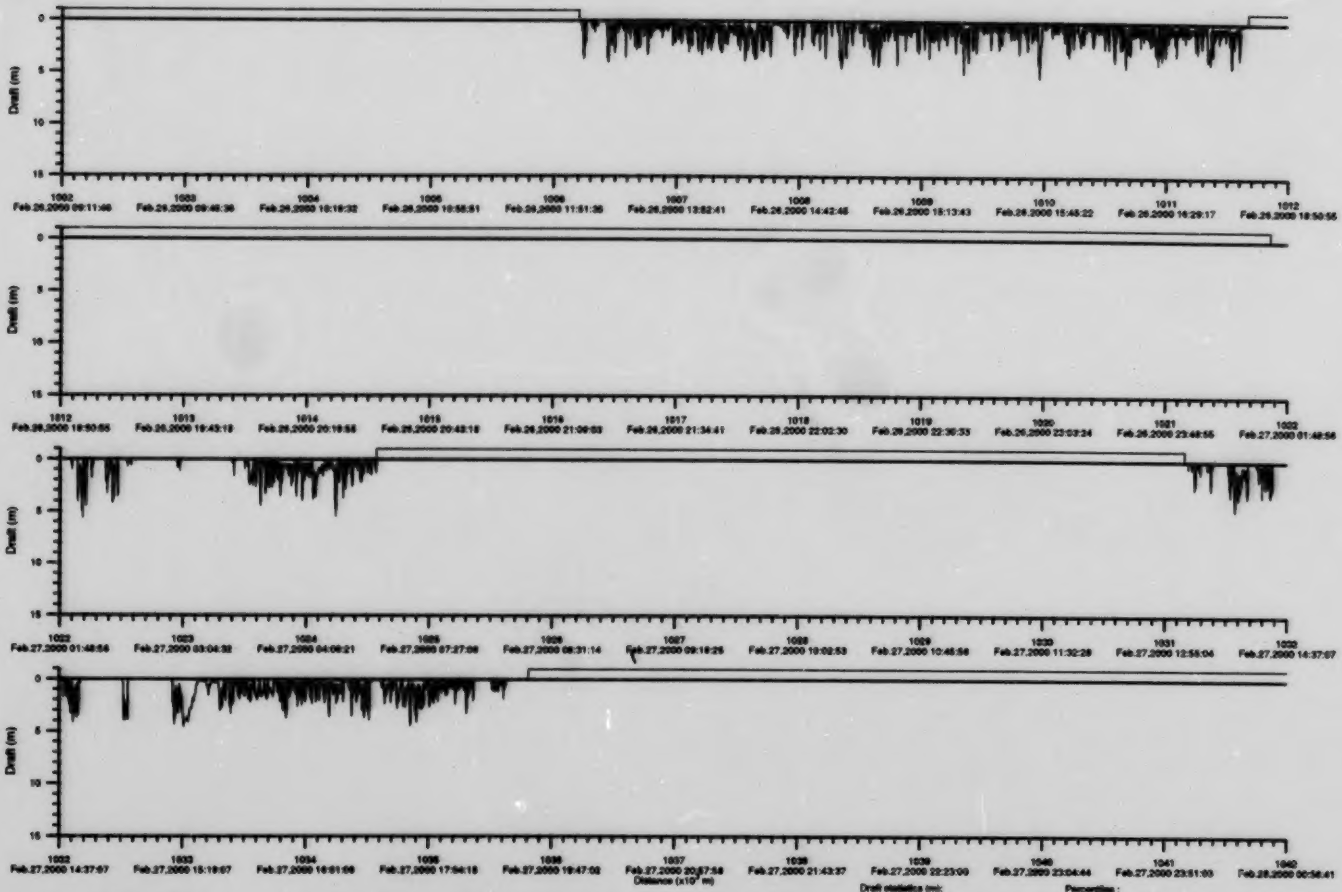
Date: 2000/02/25 02:16:13.03 to 2000/02/26 09:11:45.82 GMT

Draft statistics (m):

Mean = 1.18
Min = 0.00
Max = 7.91
StdDev = 1.02

Percentiles :

5% : 0.16 Ice = 35.4 %
50% : 0.83 Open Water = 13.9 %
95% : 3.30 No Data = 50.7 %



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/26 09:11:45.82 to 2000/02/28 00:56:40.96 GMT

Draft statistics (m):

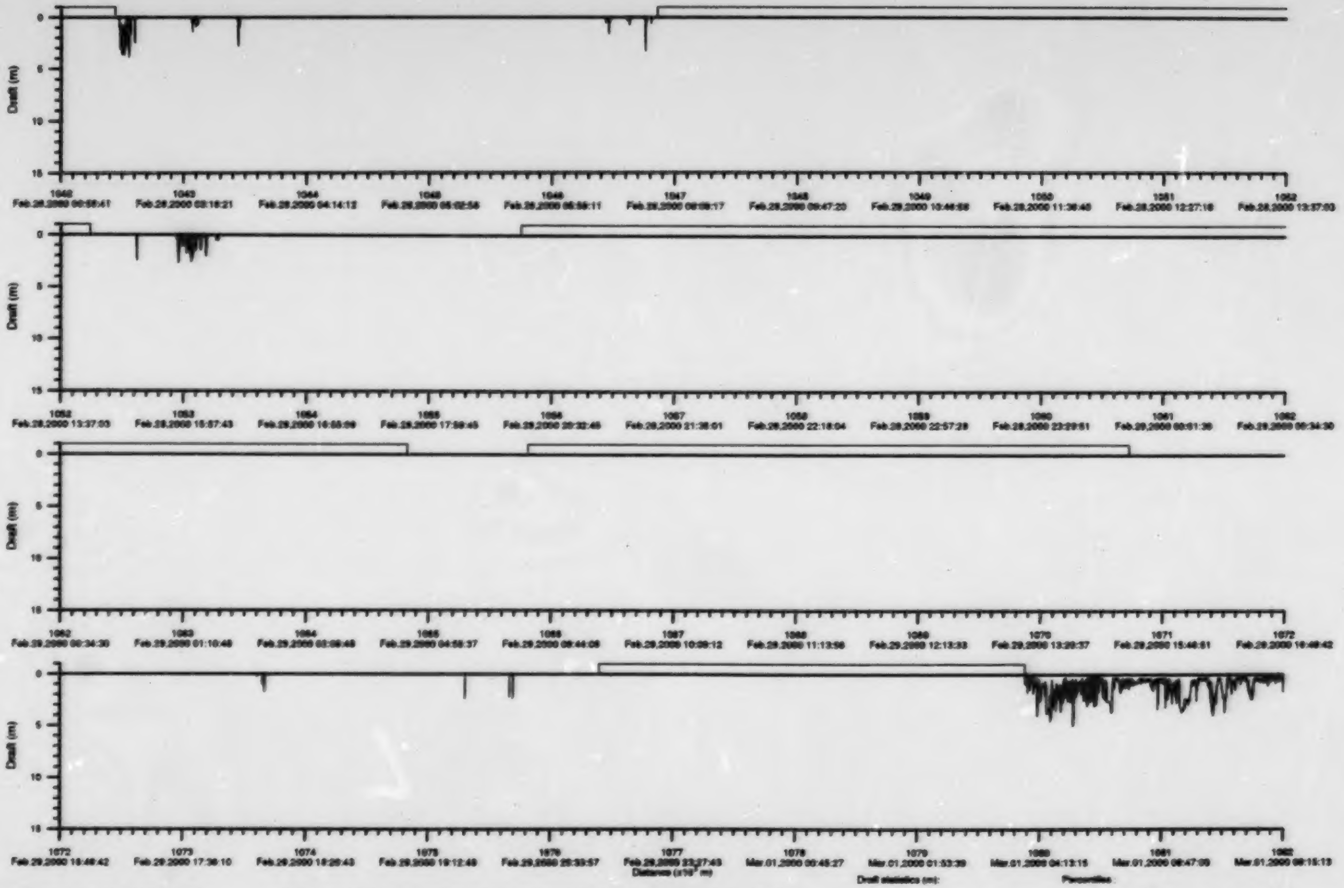
Mean = 1.01
Min = 0.00
Max = 5.62
StdDev = 0.90

Percentiles :

5% : 0.16
50% : 0.68
95% : 3.00

Ice = 24.7%
Open Water = 7.4%
No Data = 67.9%

Filename: [illegible]



Draft statistics (m):

Mean = 1.14
Min = 0.00
Max = 5.00
StdDev = 0.84

Percentiles:

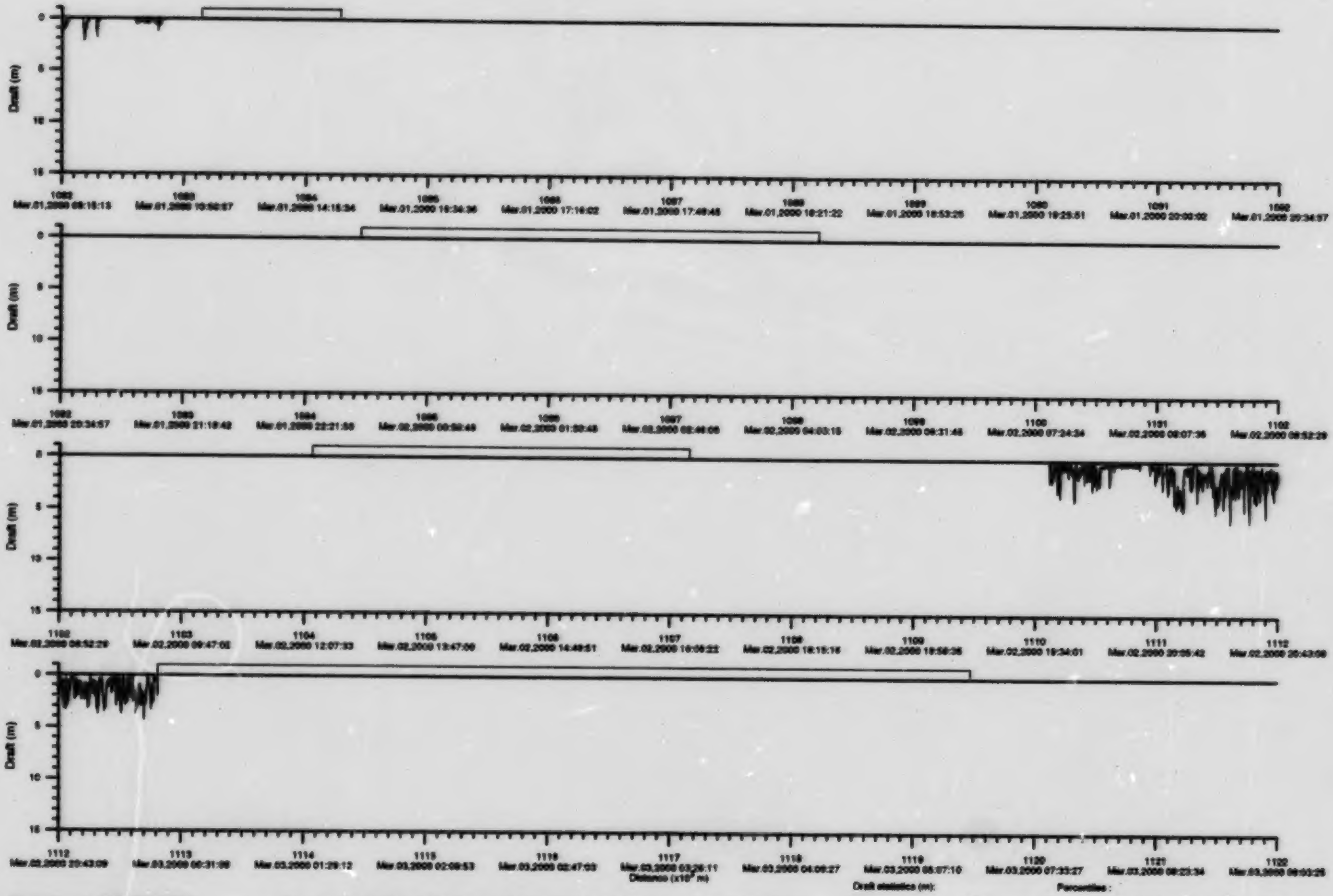
5% : 0.17 Ice = 10.9%
50% : 0.80 Open Water = 30.9%
95% : 3.15 No Data = 58.2%

Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/02/28 00:56:40.96 to 2000/03/01 09:15:13.21 GMT



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

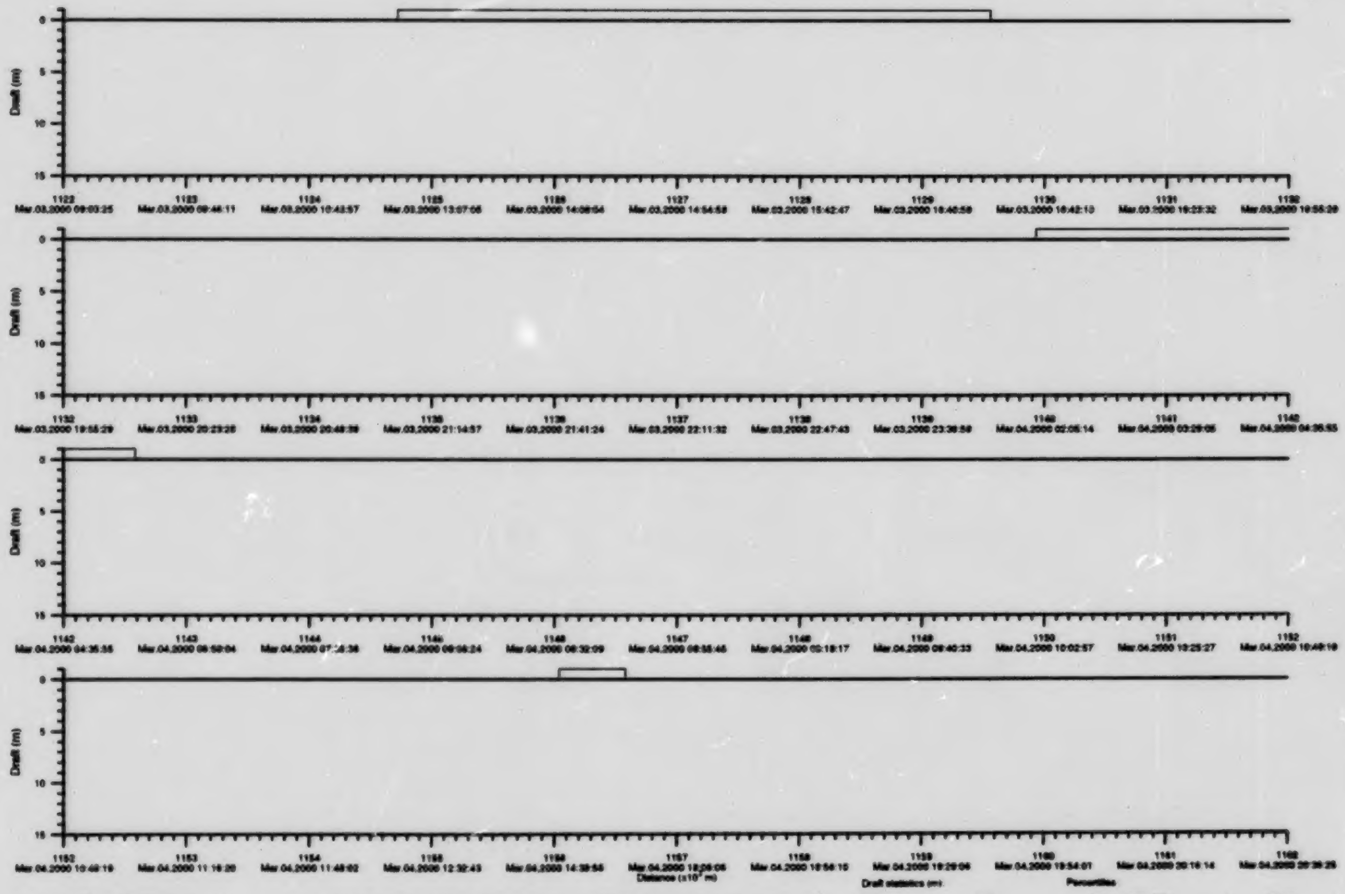
Date: 2000/03/01 09:15:13.21 to 2000/03/03 09:03:25.32 GMT

Draft statistics (m):

Mean	=	1.24
Min	=	0.01
Max	=	5.63
StdDev	=	1.06

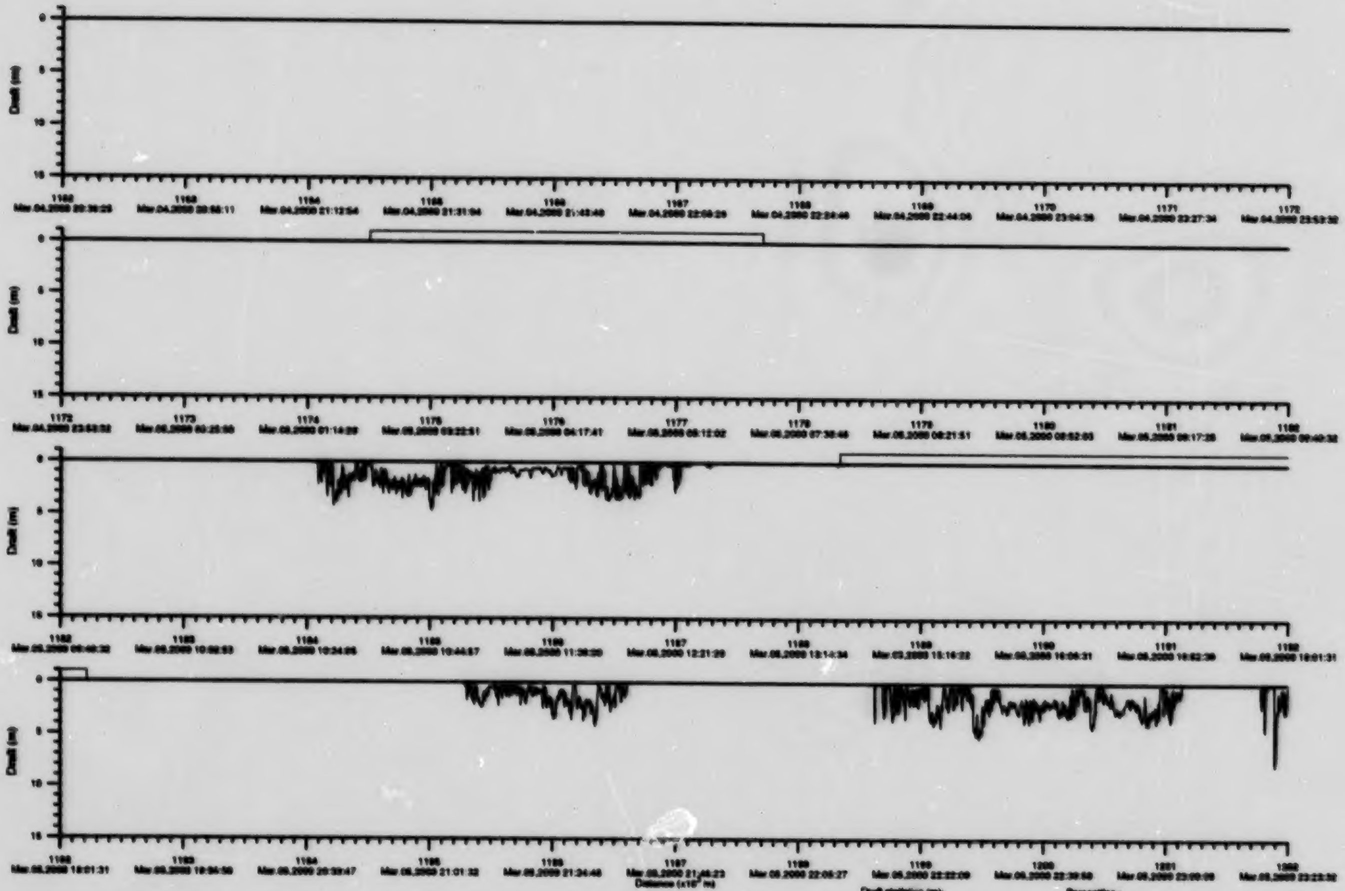
Percentiles :

5% :	0.16	Ice	=	9.7 %
50% :	0.84	Open Water	=	53.7 %
95% :	3.38	No Data	=	36.6 %



Experiment: BCD2000902
Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance
Date: 2000/03/03 09:03:25.32 to 2000/03/04 20:36:25.12 GMT



Experiment: BCD2000902
Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance
Date: 2000/03/04 20:36:25.12 to 2000/03/05 23:23:32.32 GMT

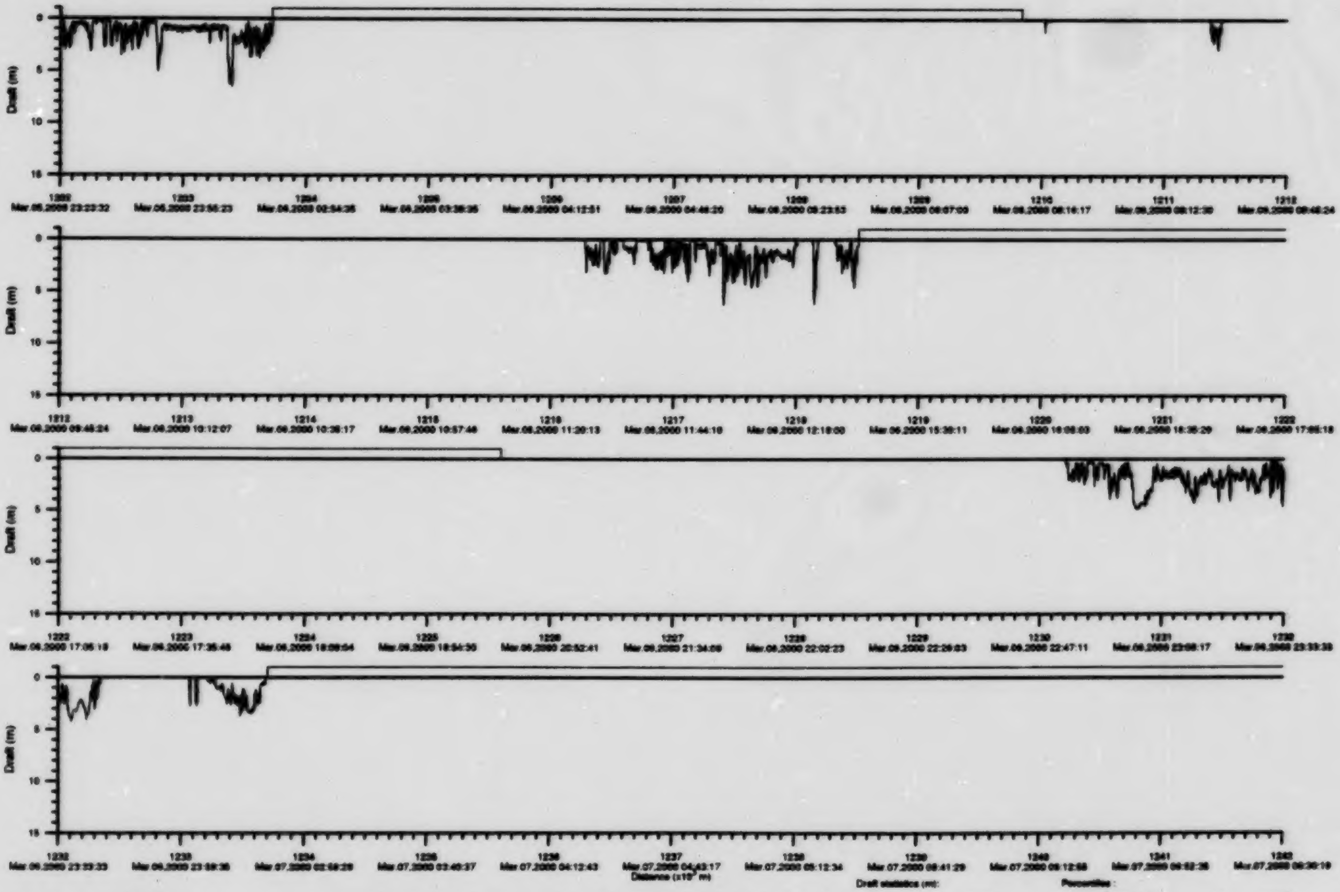
Draft statistics (m):

Mean	=	1.51
Min	=	0.00
Max	=	7.81
StdDev	=	1.06

Percentiles :

5% :	0.11	Ice	=	40.2 %
50% :	1.41	Open Water	=	42.1 %
95% :	3.38	No Data	=	17.7 %

Filename [illegible]



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/03/05 23:23:32.32 to 2000/03/07 08:30:18.98 GMT

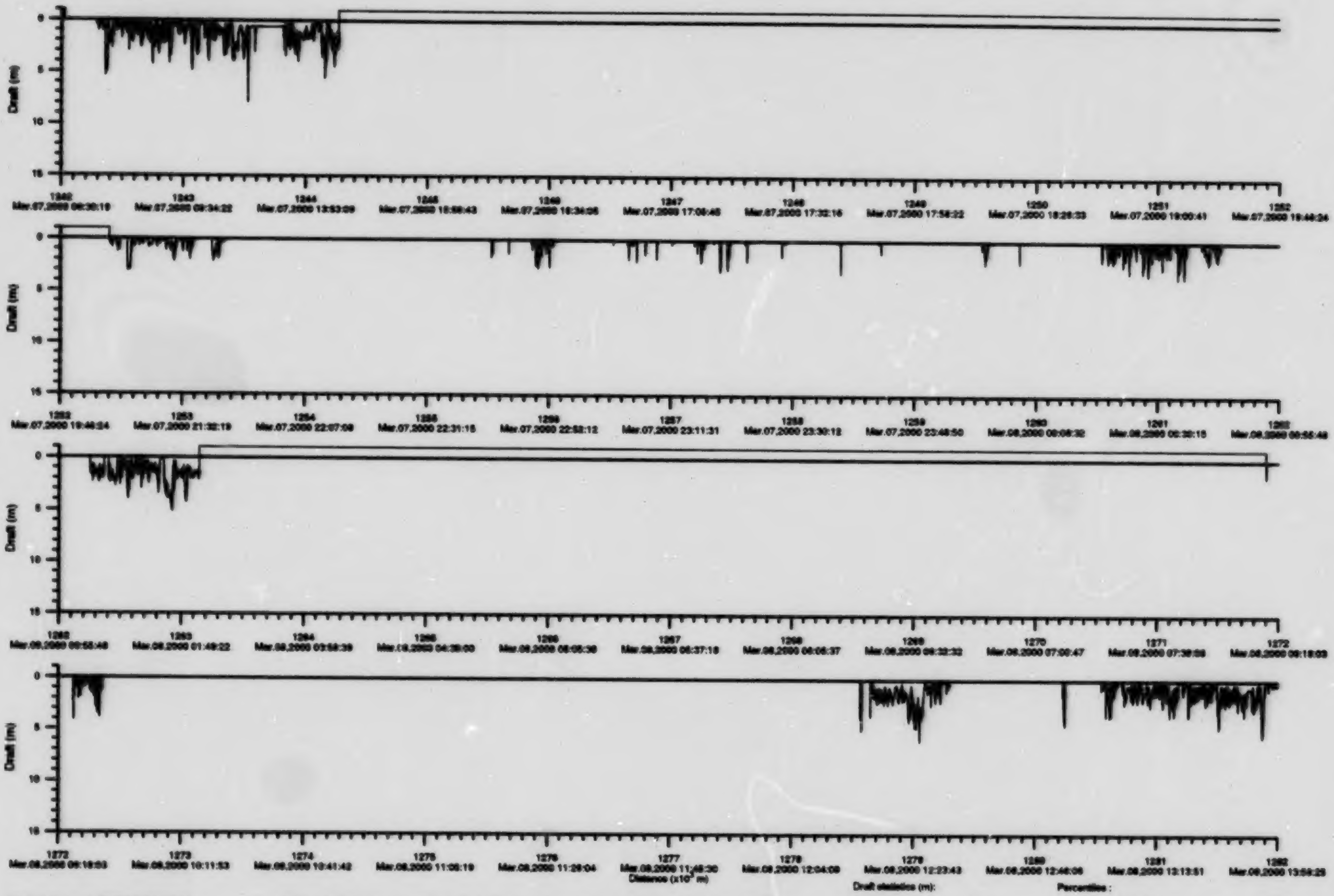
Draft statistics (m):

Mean = 1.65
Min = 0.01
Max = 6.55
StdDev = 1.10

Percentiles :

5% : 0.27 Ice = 16.5 %
50% : 1.58 Open Water = 29.7 %
95% : 3.75 No Data = 53.8 %

[illegible]



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/03/07 08:30:18.98 to 2000/03/08 13:56:25.17 GMT

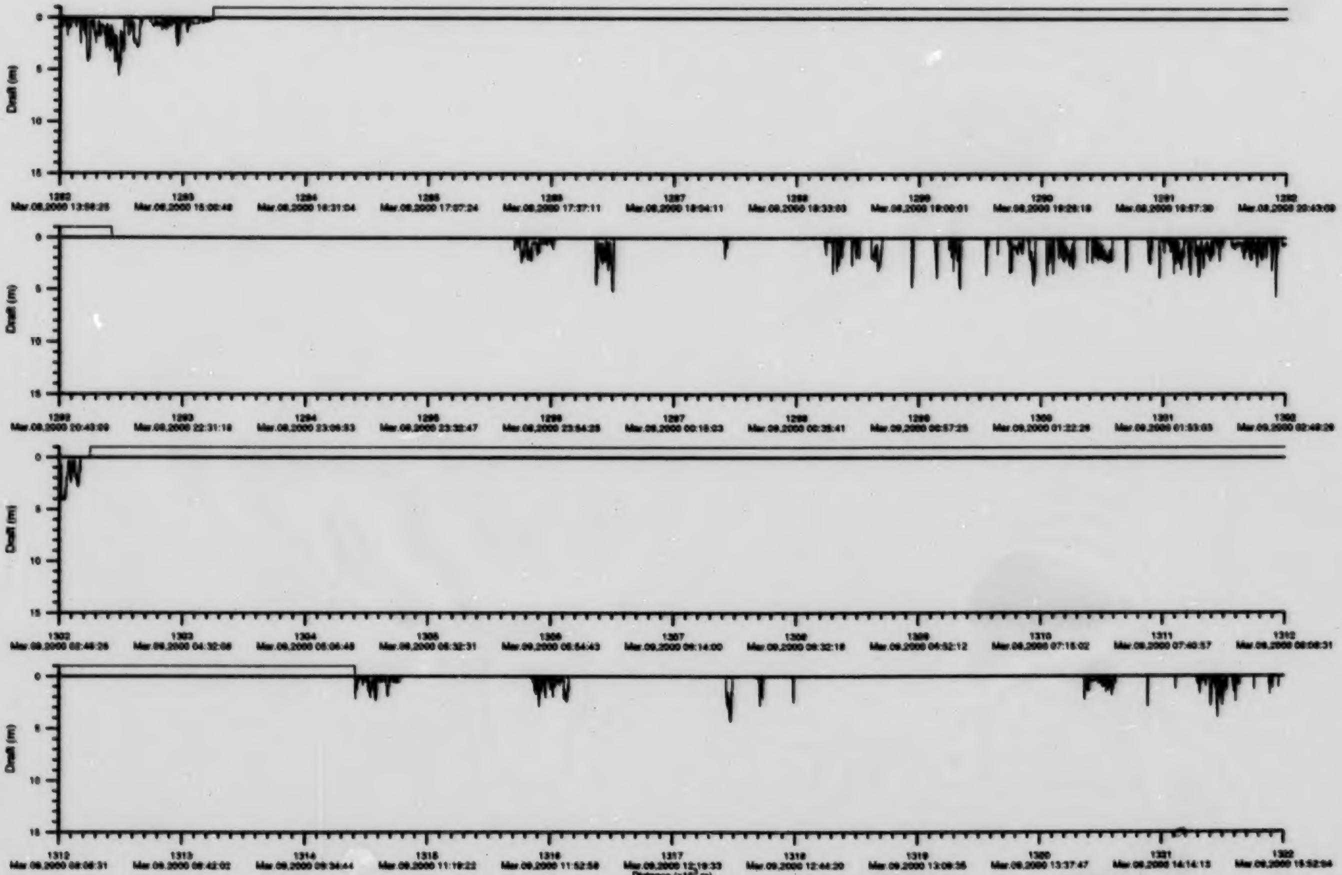
Draft statistics (m):

Mean = 1.09
Min = 0.00
Max = 7.87
StdDev = 0.98

Percentiles :

5% : 0.10 Ice = 23.8%
50% : 0.75 Open Water = 34.0%
95% : 3.06 No Data = 42.3%

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

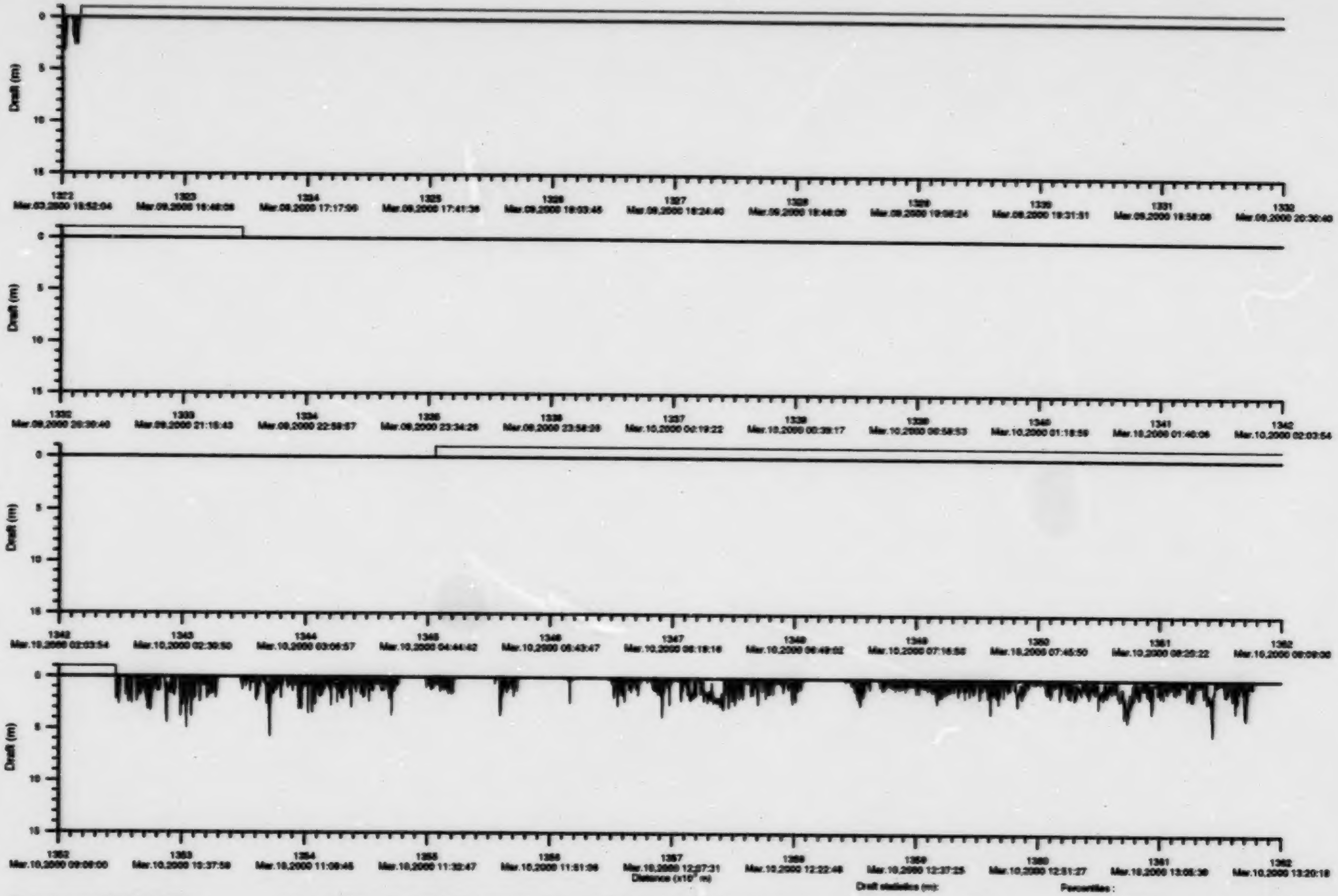
Date: 2000/03/08 13:56:25.17 to 2000/03/09 15:52:03.57 GMT

Draft statistics (m):

Mean = 1.02
Min = 0.00
Max = 5.74
StdDev = 0.98

Percentiles :

5% : 0.08 Ice = 17.3%
50% : 0.63 Open Water = 29.3%
95% : 3.01 No Data = 53.3%



Experiment: BCD2000902

Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

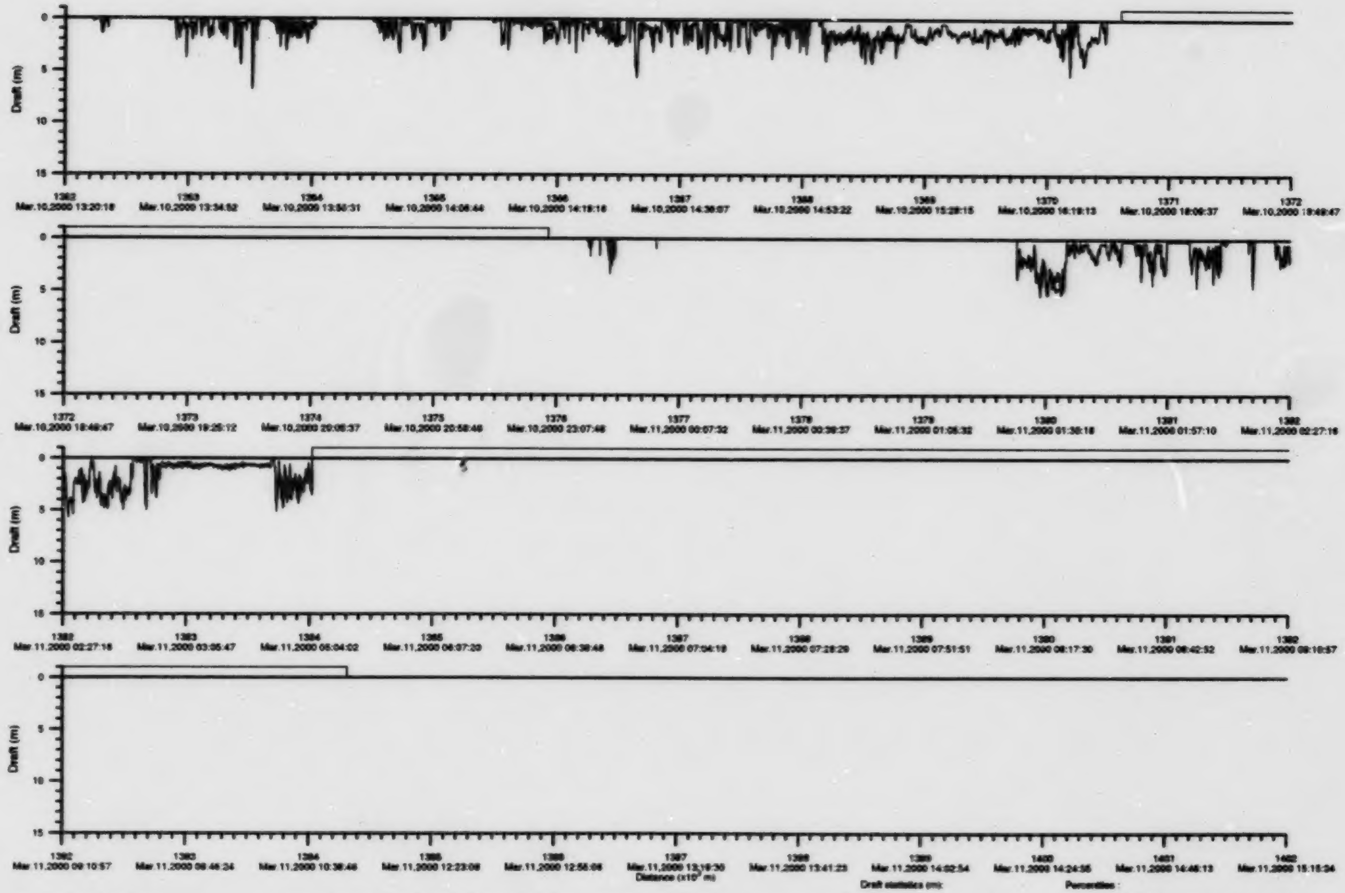
Date: 2000/03/09 15:52:03.57 to 2000/03/10 13:20:18.37 GMT

Draft statistics (m):

Mean = 0.69
Min = -0.02
Max = 5.75
StdDev = 0.69

Percentiles :

5% : 0.07 Ice = 25.6 %
50% : 0.43 Open Water = 25.6 %
95% : 2.08 No Data = 48.8 %



Experiment: BCD2000902
Instrument: IPS4–1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance
Date: 2000/03/10 13:20:18.37 to 2000/03/11 15:15:24.17 GMT

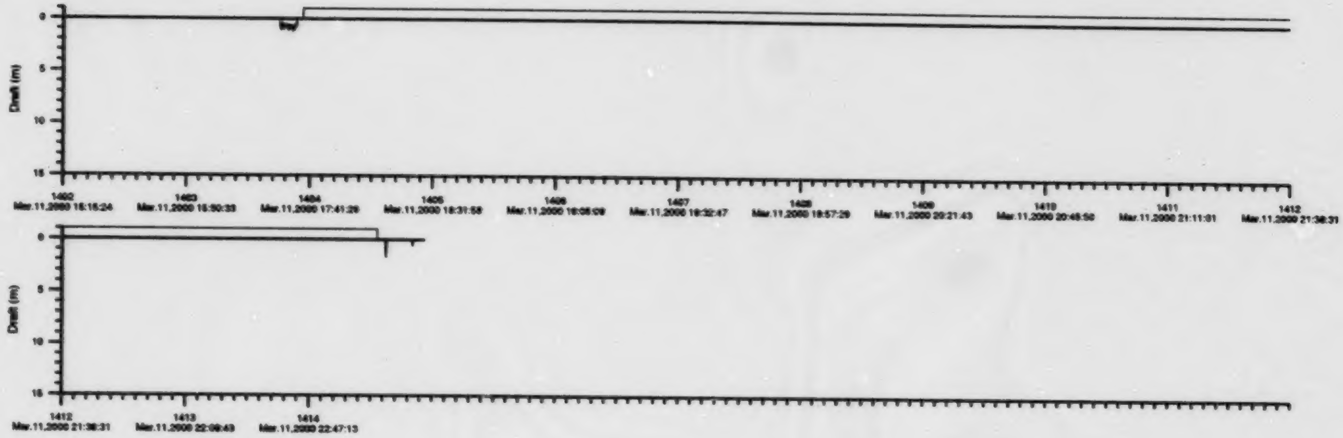
Draft statistics (m):

Mean	=	1.25
Min	=	-0.02
Max	=	6.81
StdDev	=	1.07

Percentiles :

5% :	0.11	Ice	=	32.0%
50% :	0.94	Open Water	=	28.9%
95% :	3.57	No Data	=	39.1%

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4-1013

Site : Confederation Bridge 2000 Northwest Draft Verses Uniform Distance

Date: 2000/03/11 15:15:24.17 to 2000/03/11 23:59:30.35 GMT

Draft statistics (m):

Mean	=	0.72
Min	=	0.02
Max	=	1.68
StdDev	=	0.27

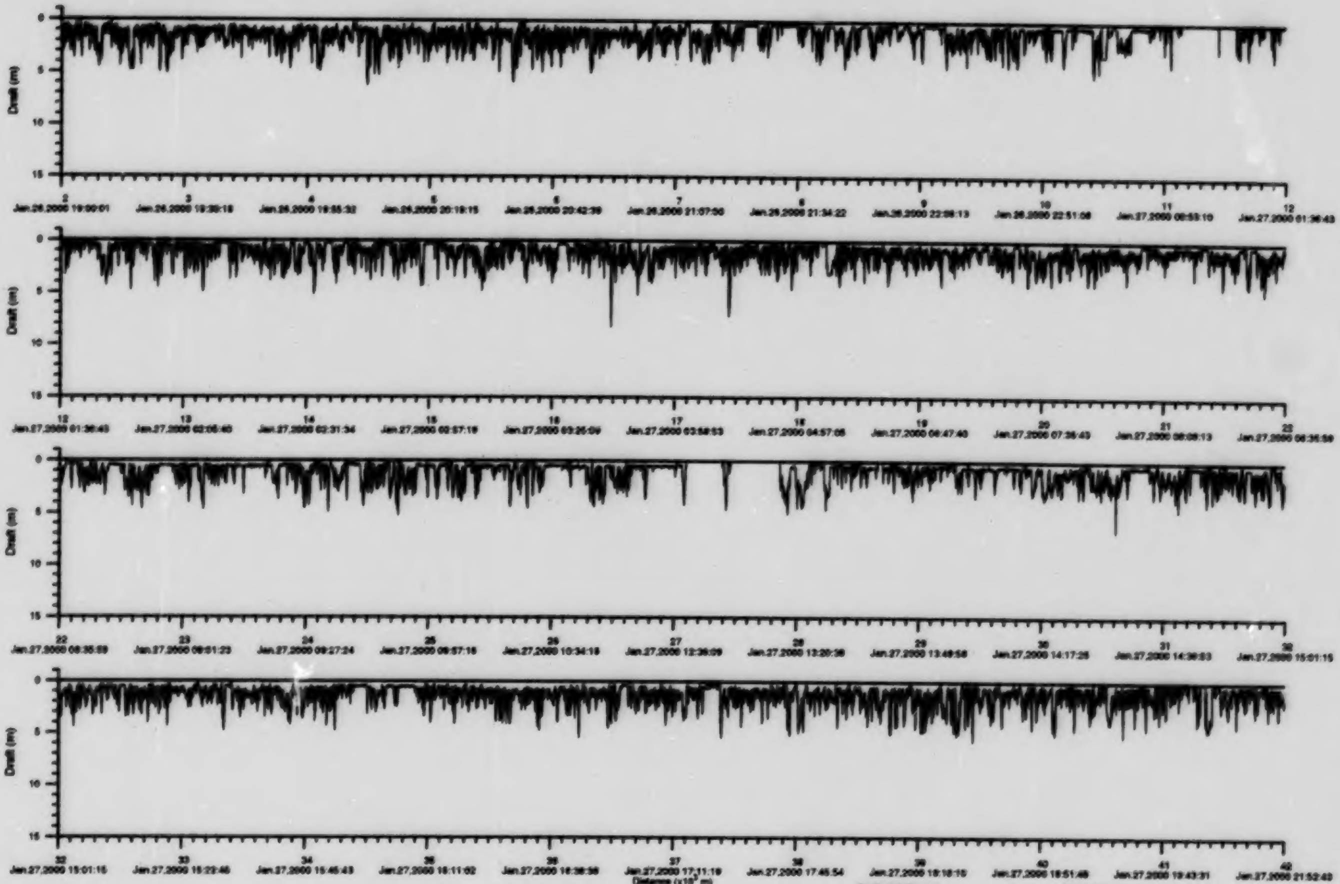
Percentiles :

5% :	0.10	Ice	=	1.5%
50% :	0.71	Open Water	=	16.5%
95% :	1.08	No Data	=	82.0%

Filename: ps2000ips13_draft_N_Distance.dat

3.4.6 Draft Vs Uniform Distance IPS 1018 Southeast 1344, Jan 26 – Mar 11

The final ice draft data set is a continuous spatial series with a 0.5-meter resolution in the horizontal and 1 cm resolution in the vertical. The ice draft data have negative spikes removed and open water periods, minimal ice periods, and suspect data flagged and masked. The masked draft data set has been combined with the edited ADCP ice velocities to compute Ice displacement. Periods of no motion are detected and a final data set of ice drafts verses uniform distance is presented here. IPS instrument 1018 mooring number 1344 was moored on the Southeast side of Bridge Pier 24 at 46° 12.296N and -63° 45.346W in a water depth of 20m on January 26th 2000.



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/01/26 19:00:01.33 to 2000/01/27 21:52:43.29 GMT

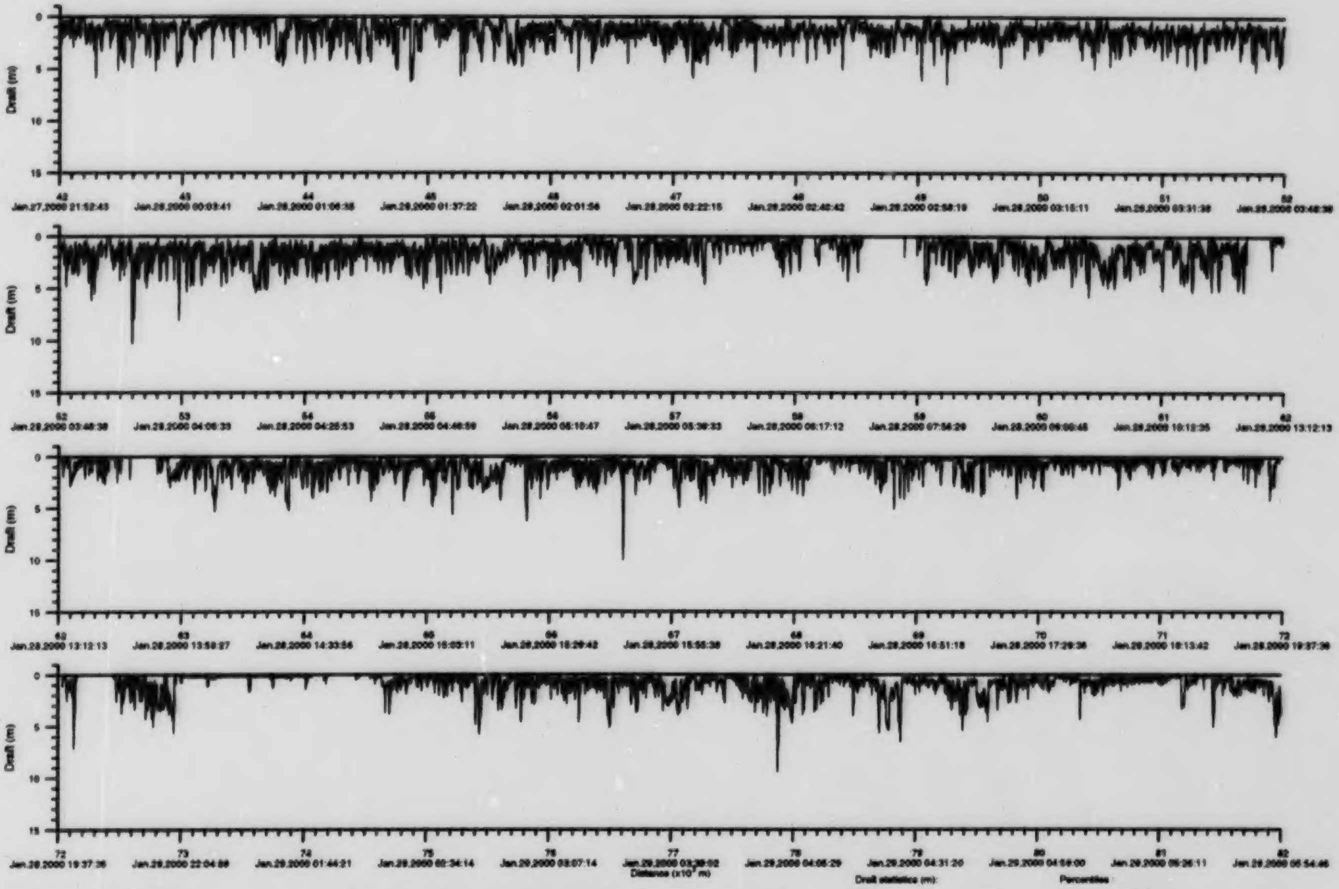
Draft statistics (m):

Mean = 1.33
Min = 0.08
Max = 8.32
StdDev = 0.95

Percentiles :

5% : 0.32 Ice = 96.5 %
50% : 1.08 Open Water = 3.5 %
95% : 3.27 No Data = 0.0 %

Filename: [illegible]



Experiment: BCD2000902
Instrument: IPS4-1018

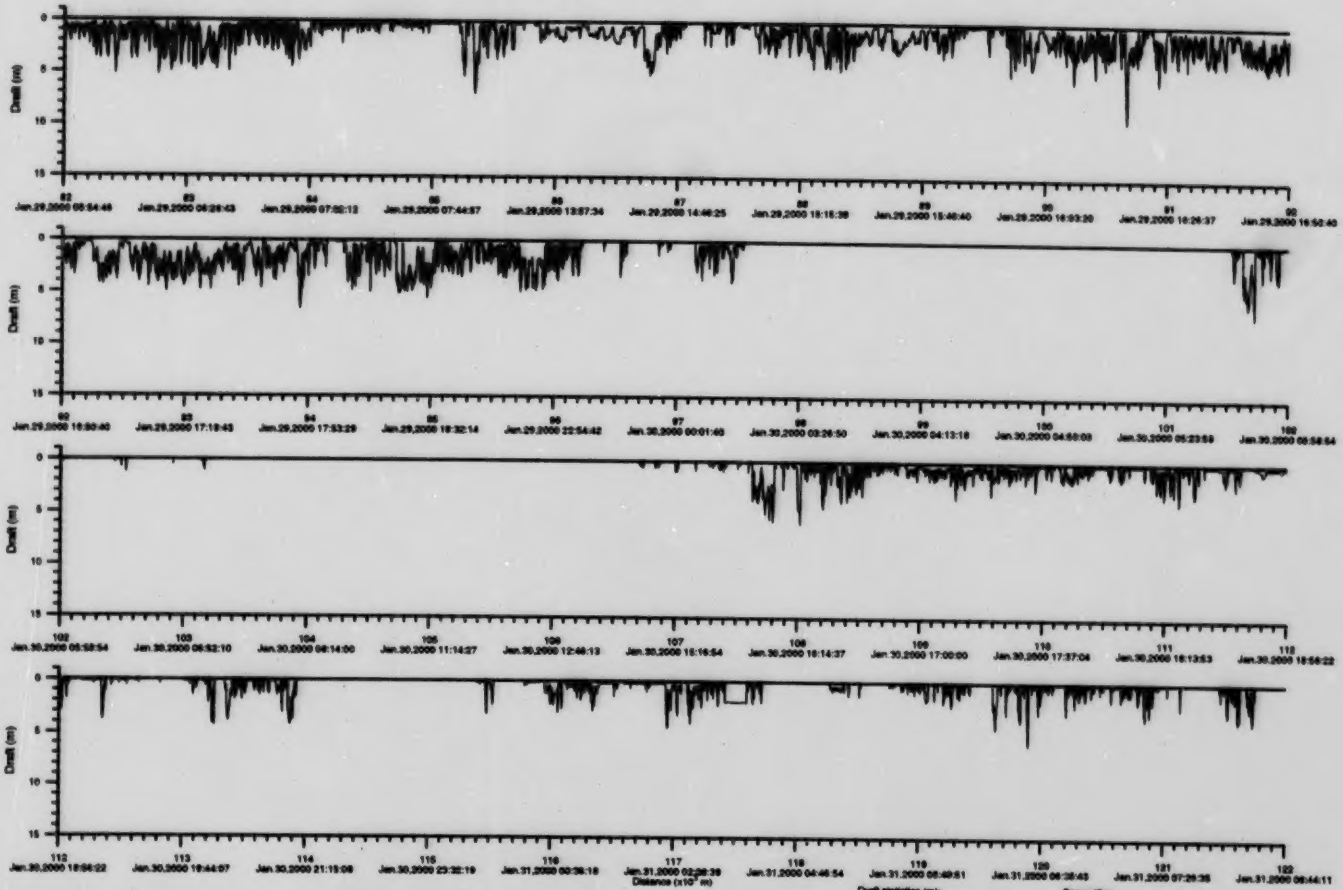
Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/01/27 21:52:43.29 to 2000/01/29 05:54:46.13 GMT

Draft statistics (m):

Mean = 1.28
Min = 0.00
Max = 10.28
StdDev = 1.06

Percentiles

5% : 0.22 Ice = 95.8%
50% : 0.94 Open Water = 4.2%
95% : 3.44 No Data = 0.0%



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/01/29 05:54:46.13 to 2000/01/31 08:44:10.64 GMT

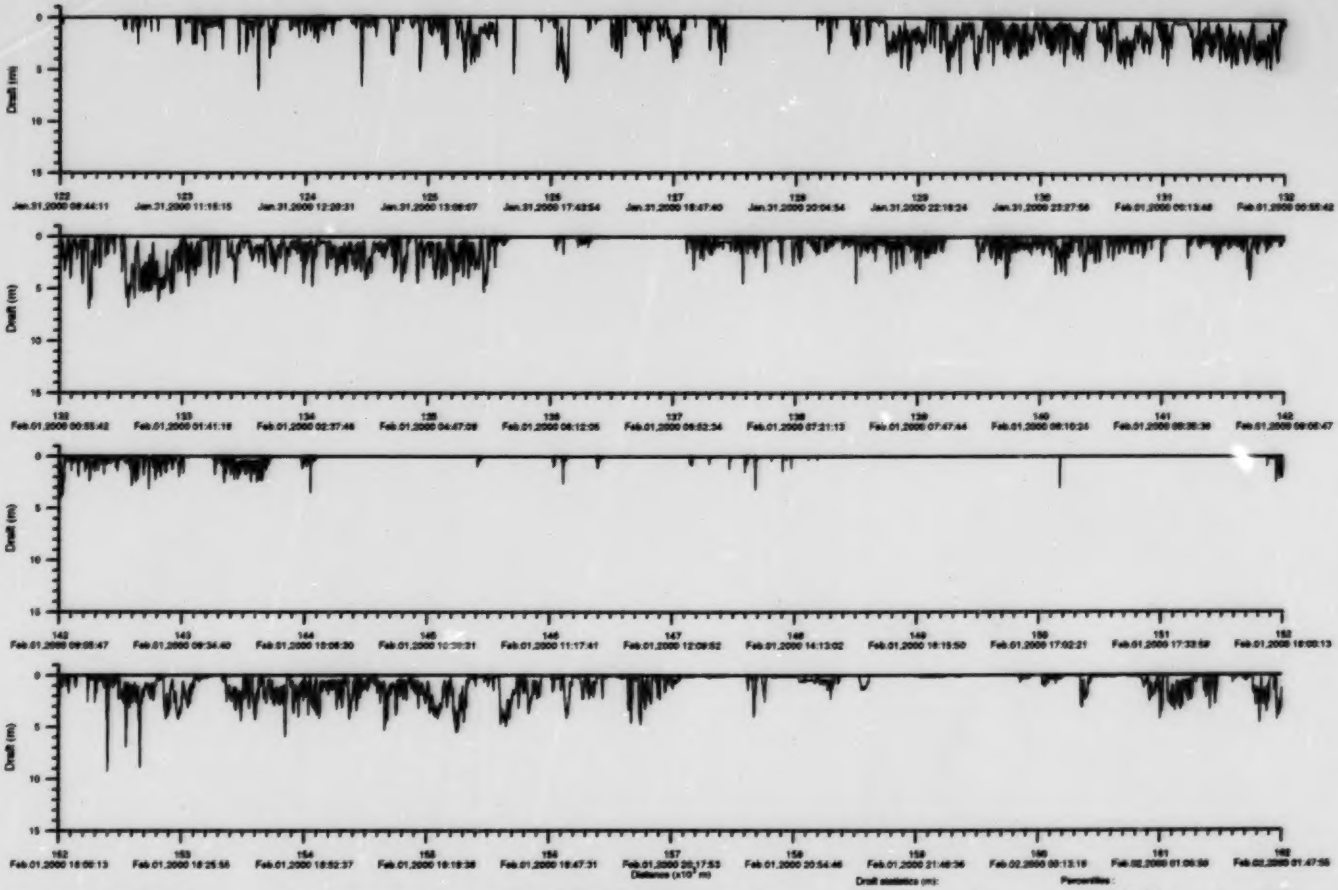
Draft statistics (m):

Mean = 1.16
Min = 0.00
Max = 9.37
StdDev = 1.12

Percentiles :

5% : 0.16 Ice = 68.2%
50% : 0.71 Open Water = 31.8%
95% : 3.50 No Data = 0.0%

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

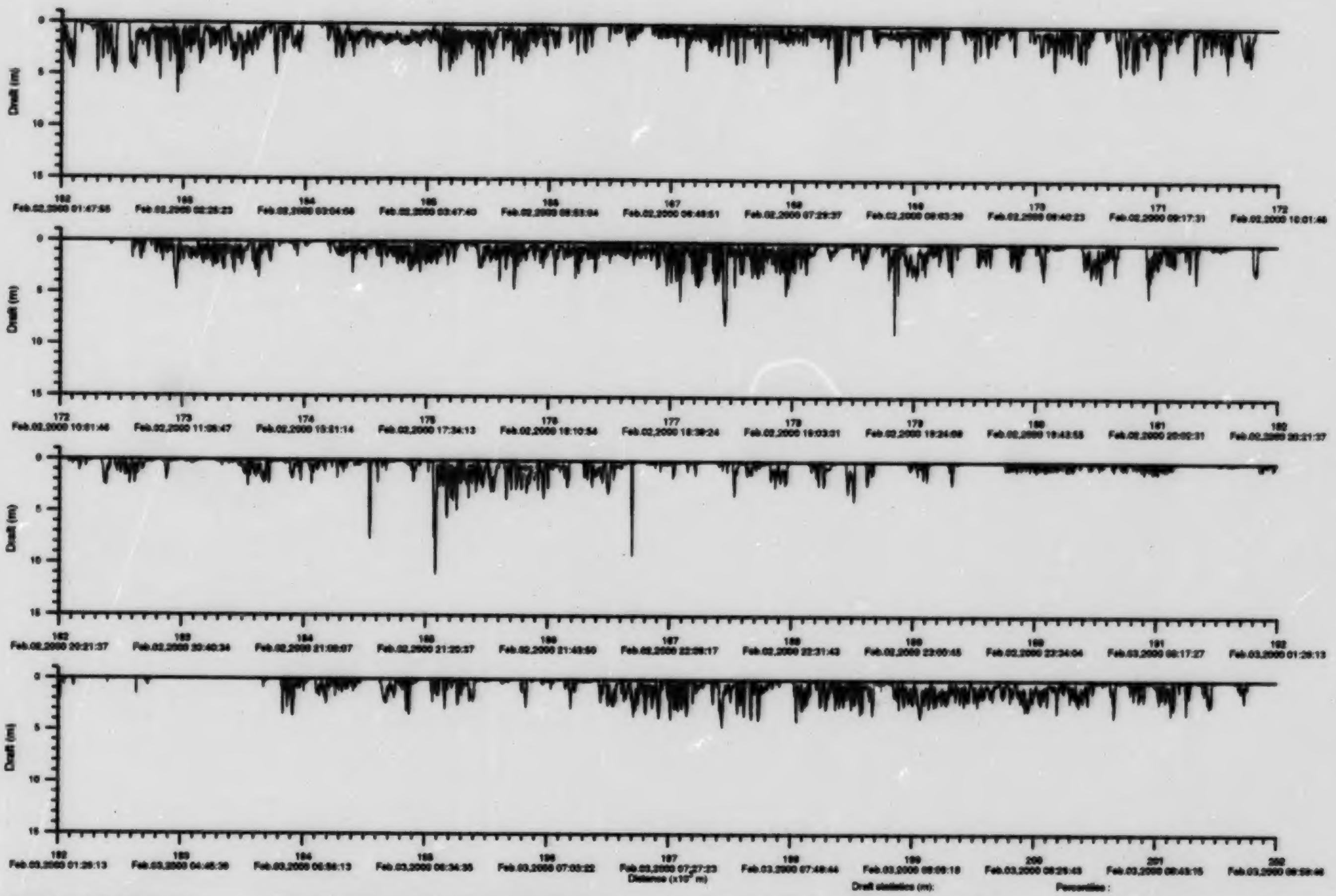
Date: 2000/01/31 08:44:10.64 to 2000/02/02 01:47:54.91 GMT

Draft statistics (m):

Mean	=	1.13
Min	=	0.00
Max	=	9.31
StdDev	=	1.14

Percentiles :

5% :	0.14	Ice	=	74.2%
50% :	0.88	Open Water	=	25.8%
95% :	3.52	No Data	=	0.0%



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/02 01:47:54.91 to 2000/02/03 08:59:46.27 GMT

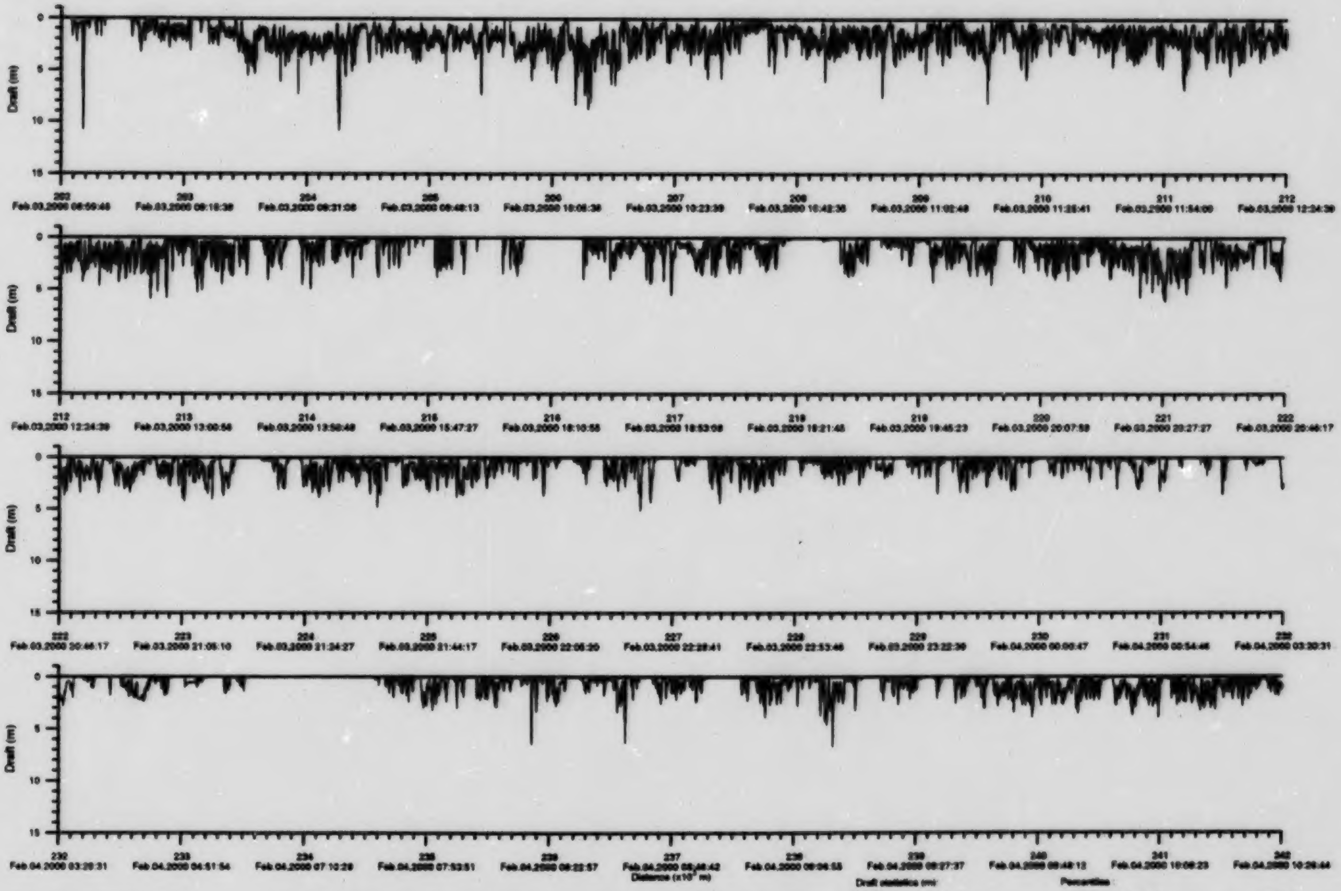
Draft statistics (m):

Mean	=	0.91
Min	=	0.00
Max	=	11.07
StdDev	=	0.89

Percentiles :

5% :	0.14	Ice	=	86.3%
50% :	0.68	Open Water	=	13.7%
95% :	2.65	No Data	=	0.0%

Filename: pd2000pe18_draft_N_Distance.dat



Draft statistics (m):

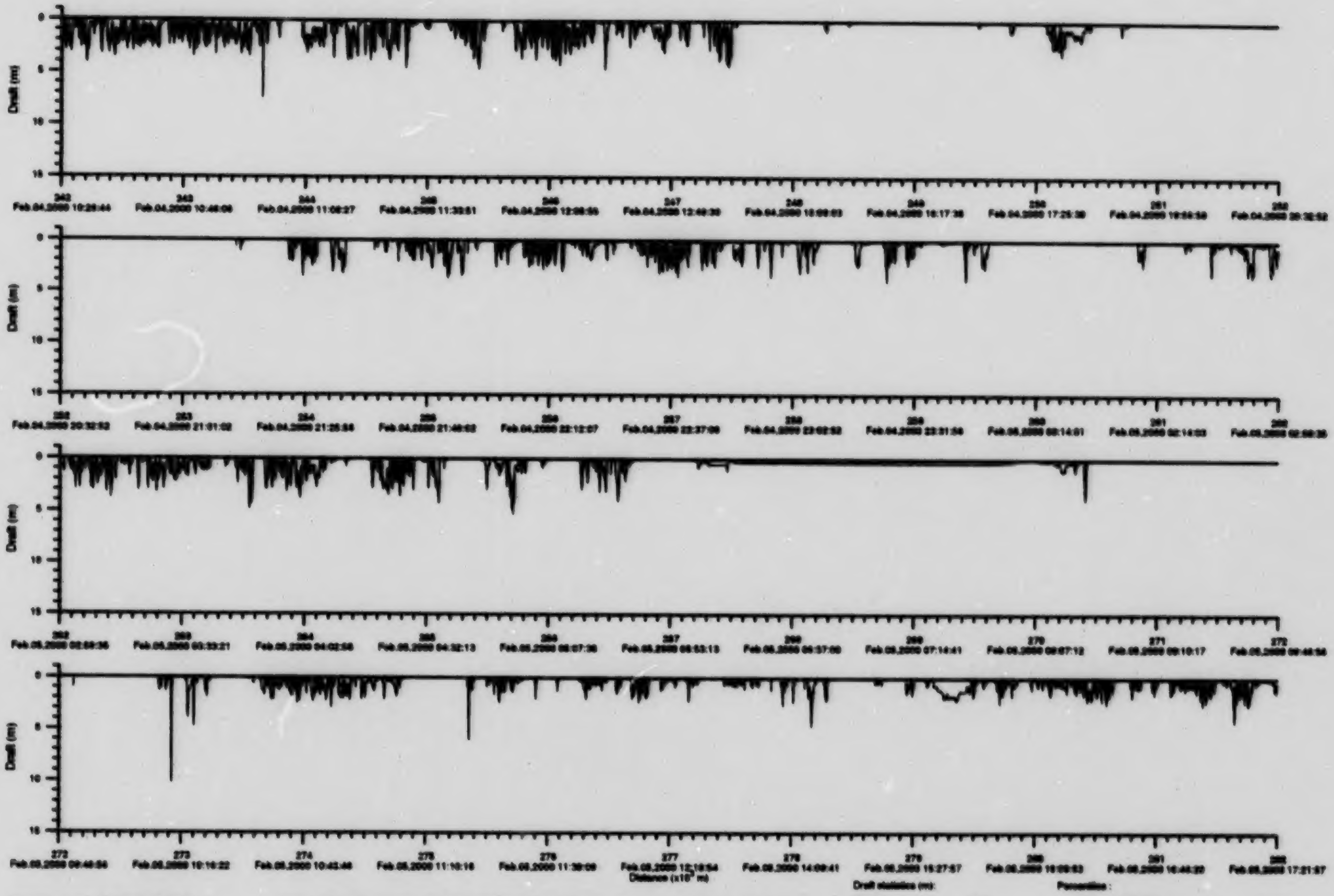
Mean = 1.28
Min = 0.06
Max = 10.82
StdDev = 1.08

Percentiles:

5% : 0.14 Ice = 88.0%
50% : 0.95 Open Water = 12.0%
95% : 3.28 No Data = 0.0%

Experiment: BCD2000902
Instrument: IPS4-1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/03 08:59:46.27 to 2000/02/04 10:26:43.88 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

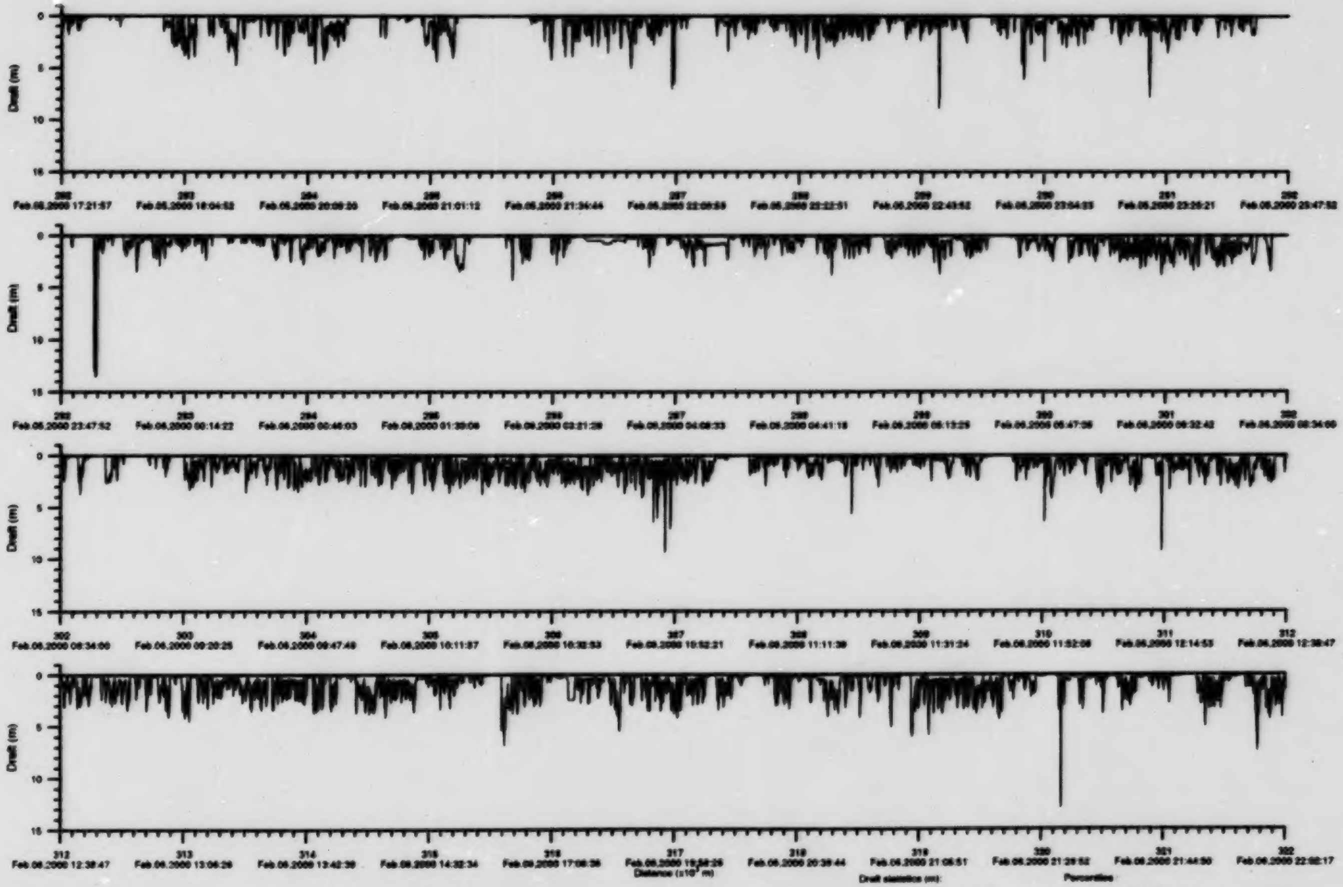
Date: 2000/02/04 10:26:43.88 to 2000/02/05 17:21:56.87 GMT

Draft statistics (m):

Mean = 0.77
Min = 0.00
Max = 10.12
StdDev = 0.77

Percentiles :

5% : 0.10 Ice = 61.4%
50% : 0.43 Open Water = 38.6%
95% : 2.40 No Data = 0.0%



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

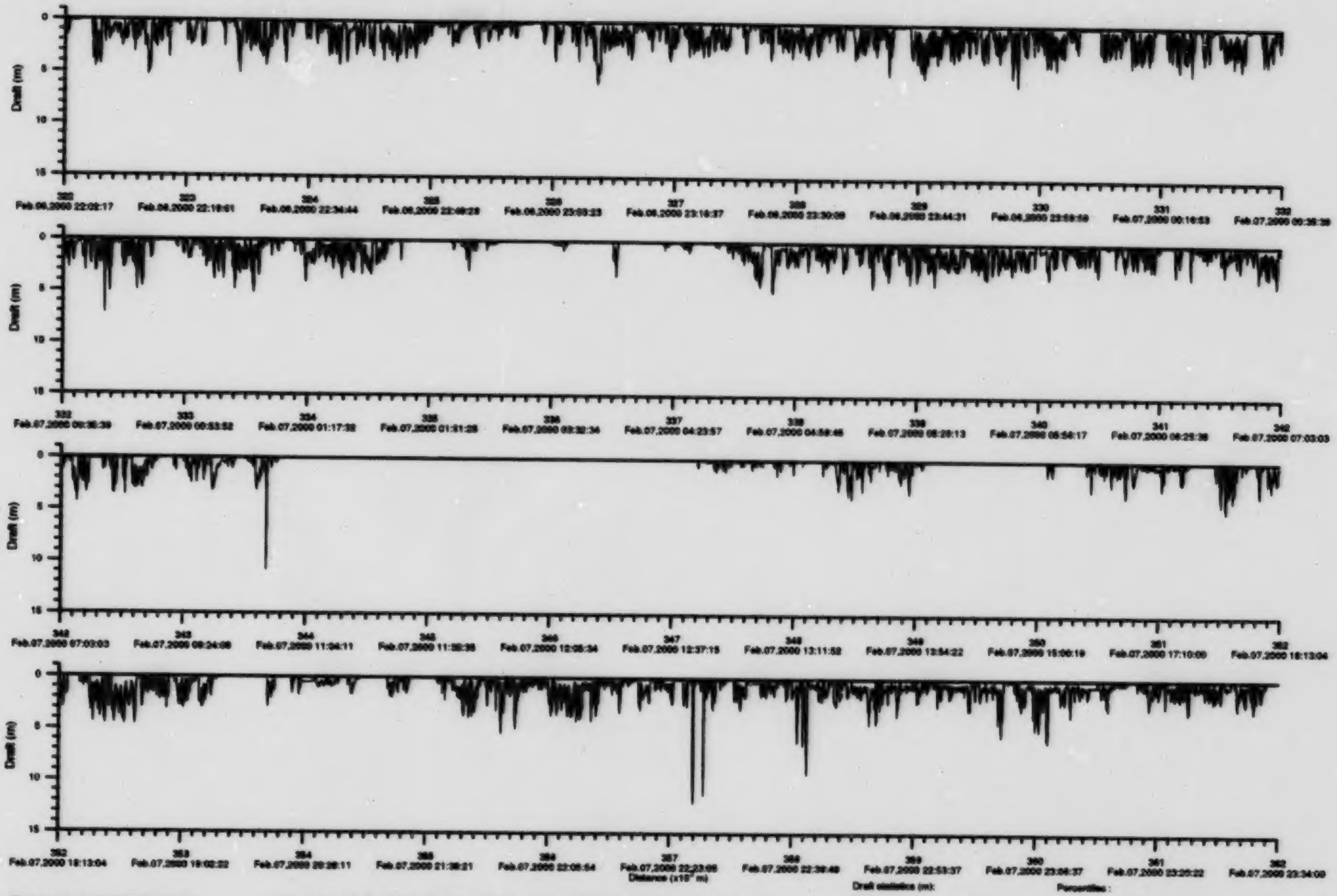
Date: 2000/02/05 17:21:56.87 to 2000/02/06 22:02:16.69 GMT

Draft statistics (m):

Mean = 0.93
Min = 0.00
Max = 13.51
StdDev = 0.84

Percentiles :

5% : 0.09 Ice = 87.3%
50% : 0.62 Open Water = 12.7%
95% : 2.72 No Data = 0.0%



Draft statistics (m):

Mean = 0.86
Min = 0.00
Max = 12.07
StdDev = 0.83

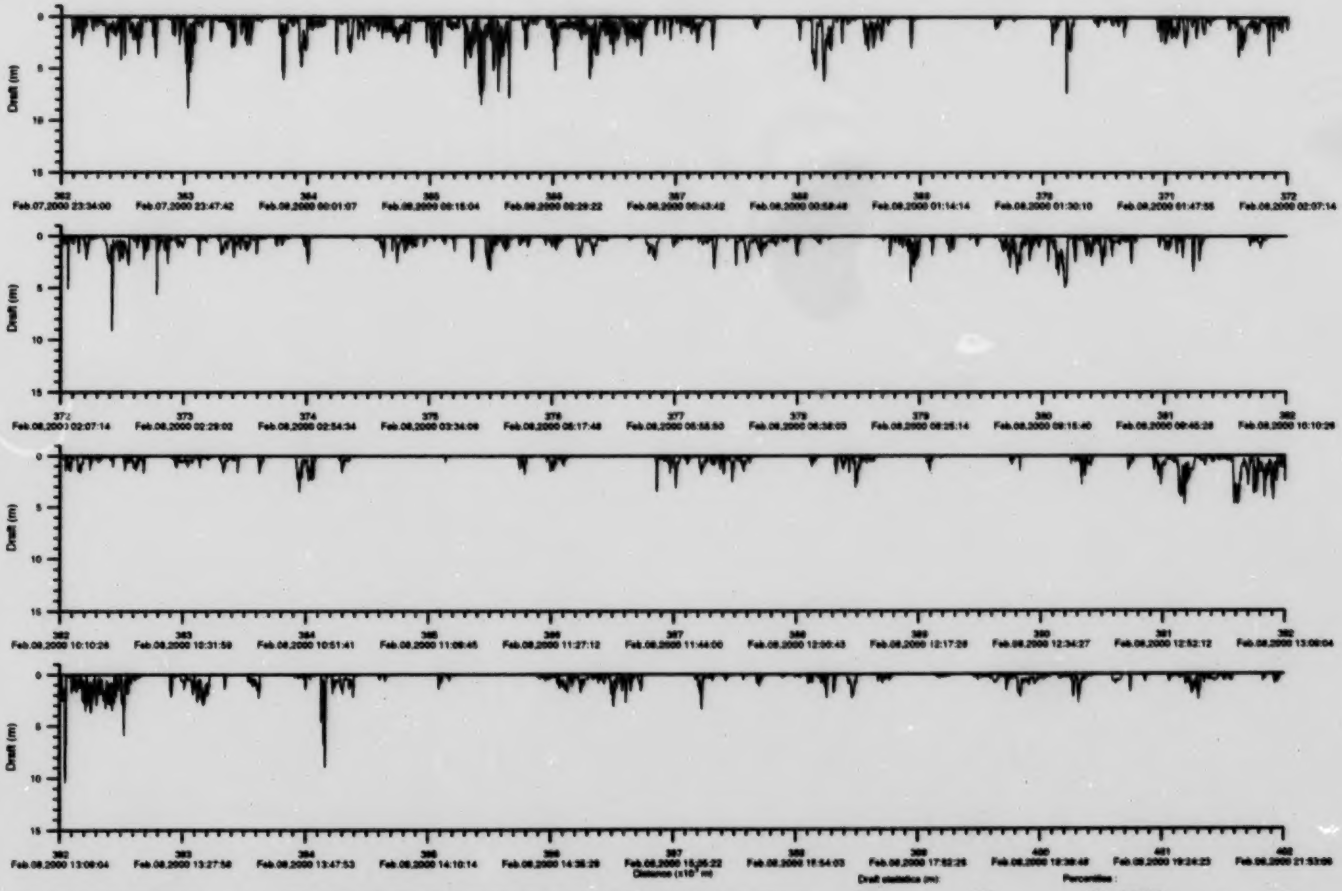
Percentiles :

5% : 0.13 Ice = 79.2%
50% : 0.62 Open Water = 20.8%
95% : 2.77 No Data = 0.0%

Filename: [illegible]

Experiment: BCD2000902
Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/06 22:02:16.69 to 2000/02/07 23:33:59.98 GMT



Draft statistics (m):

Mean = 0.72
Min = 0.00
Max = 10.41
StdDev = 0.84

Percentiles :

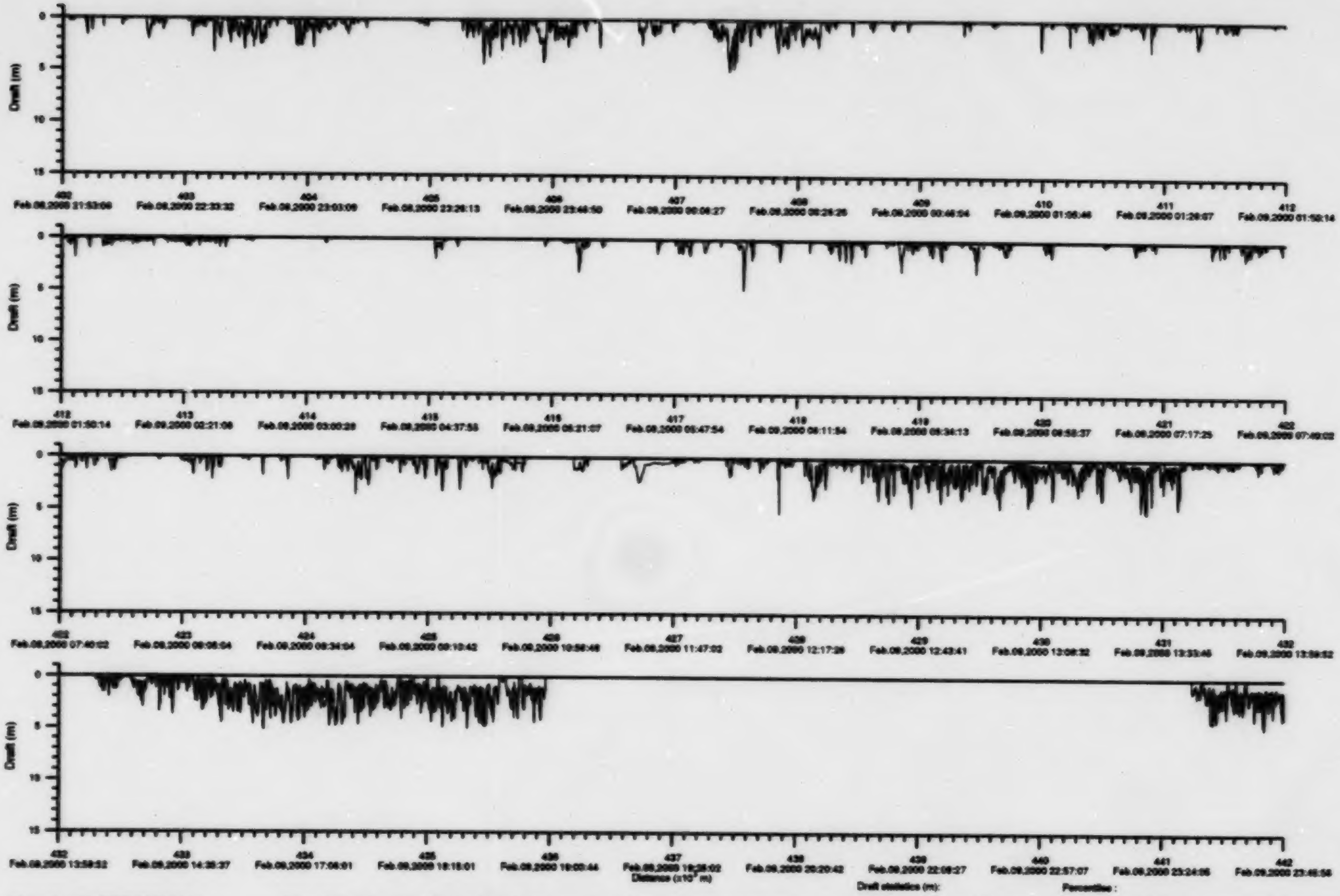
5% : 0.09 Ice = 68.1 %
50% : 0.43 Open Water = 31.9 %
95% : 2.34 No Data = 0.0 %

Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Versas Uniform Distance

Date: 2000/02/07 23:33:59.98 to 2000/02/08 21:53:05.69 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/08 21:53:05.69 to 2000/02/09 23:45:55.68 GMT

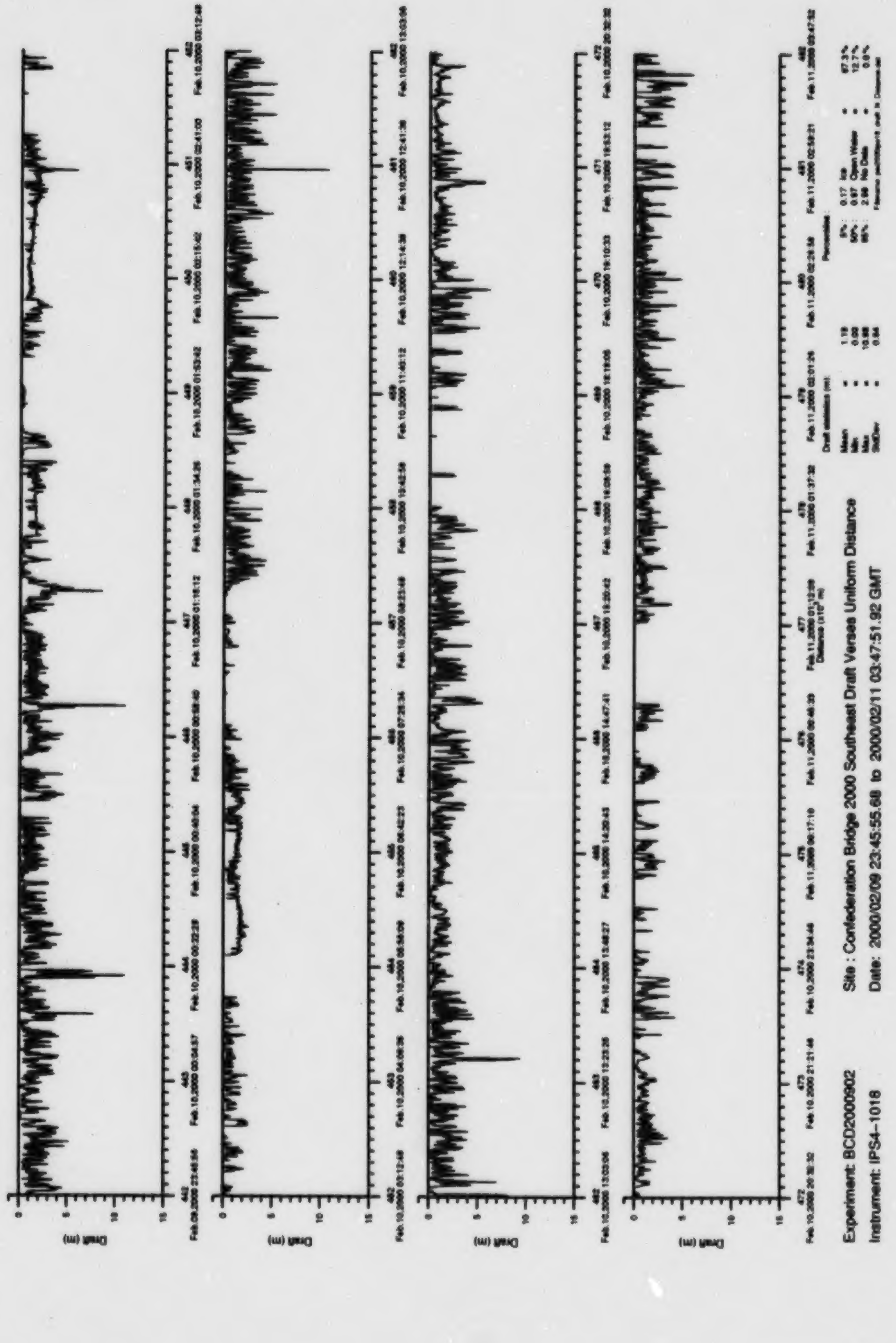
Draft statistics (m):

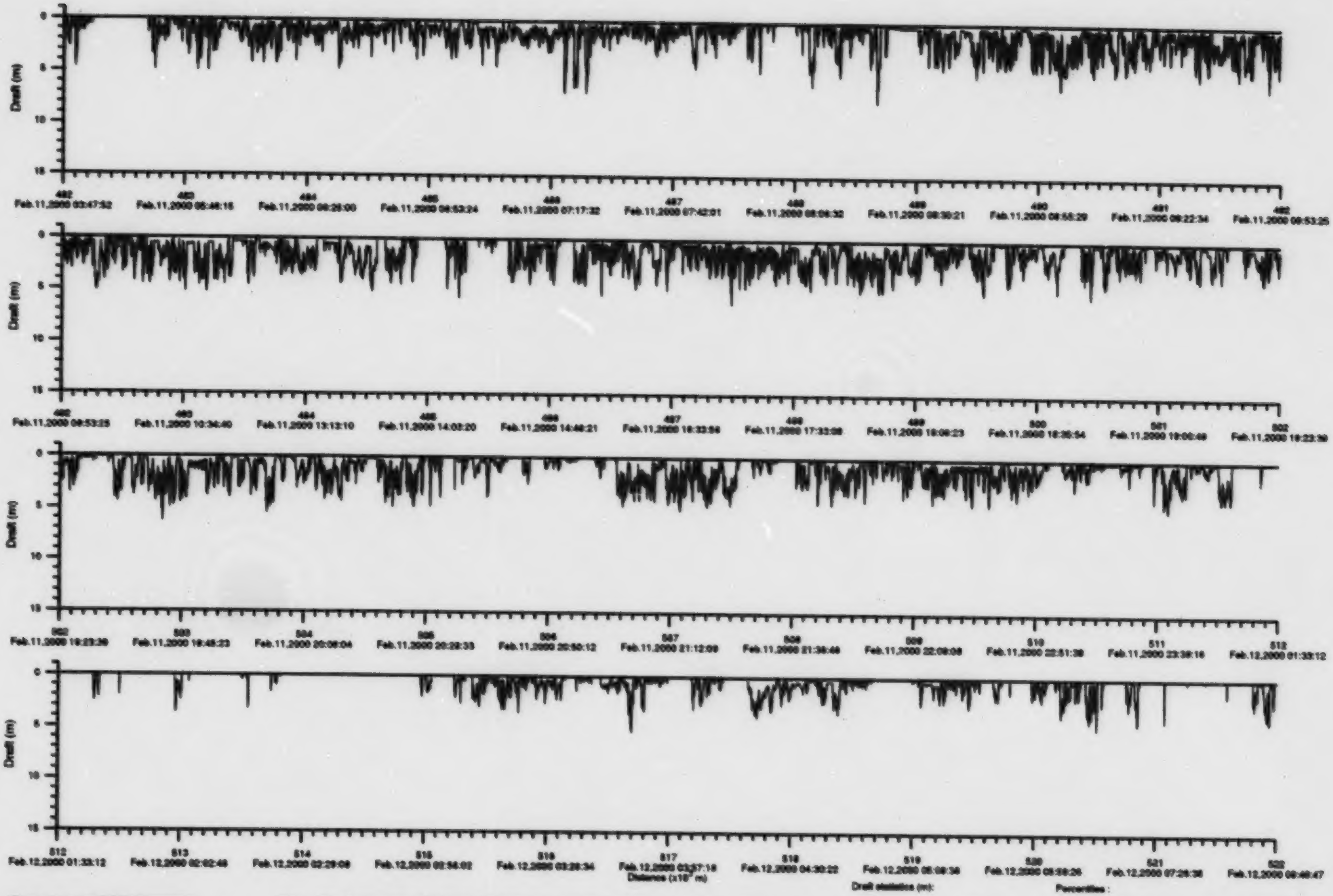
Mean = 0.84
Min = -0.00
Max = 5.25
StdDev = 0.88

Percentiles :

5% : 0.09 Ice = 72.5%
50% : 0.49 Open Water = 27.5%
95% : 2.79 No Data = 0.0%

Filename: [illegible]


Draft (m)
0
5
10
15
Distance (x10^3 m)
Draft statistics (m)
Mean : 1.19
Min : 0.00
Max : 10.88
StdDev : 0.94
Percentiles
5% : 0.17 Ice : 87.3%
50% : 0.87 Open Water : 12.7%
95% : 2.98 No Data : 0.0%
Experiment: BCD2000902
Instrument: IPS4–1018
Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/09 23:45:55.68 to 2000/02/11 03:47:51.92 GMT



Draft statistics (m):

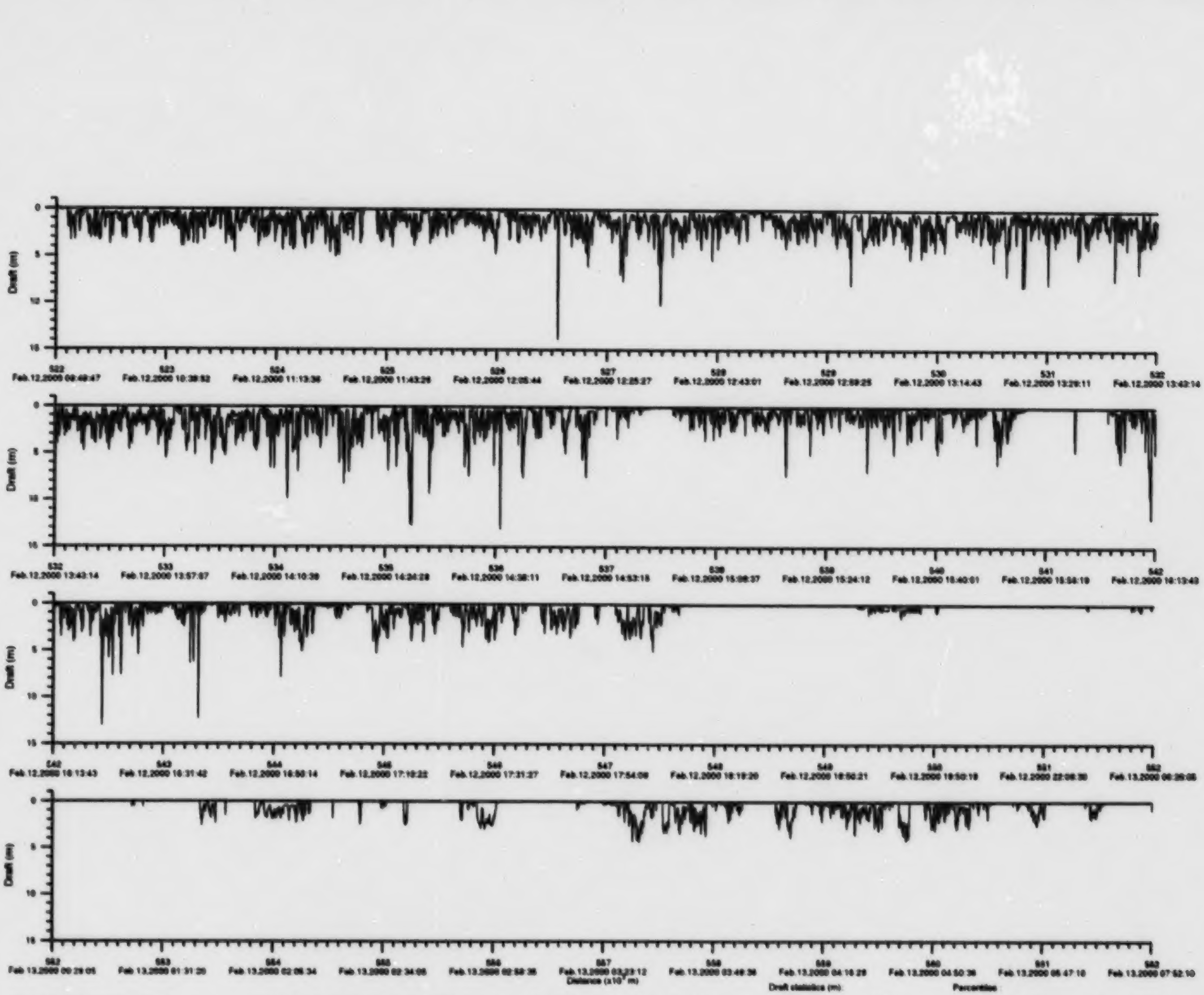
Mean = 1.28
Min = -0.09
Max = 7.61
StdDev = 1.11

Percentiles :

5% : 0.12 Ice = 84.0%
50% : 0.88 Open Water = 16.0%
95% : 3.55 No Data = 0.0%

Experiment: BCD2000902
Instrument: IPS4-1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/11 03:47:51.92 to 2000/02/12 09:49:46.81 GMT



Experiment: BCD2000902
Instrument: IPS4–1018

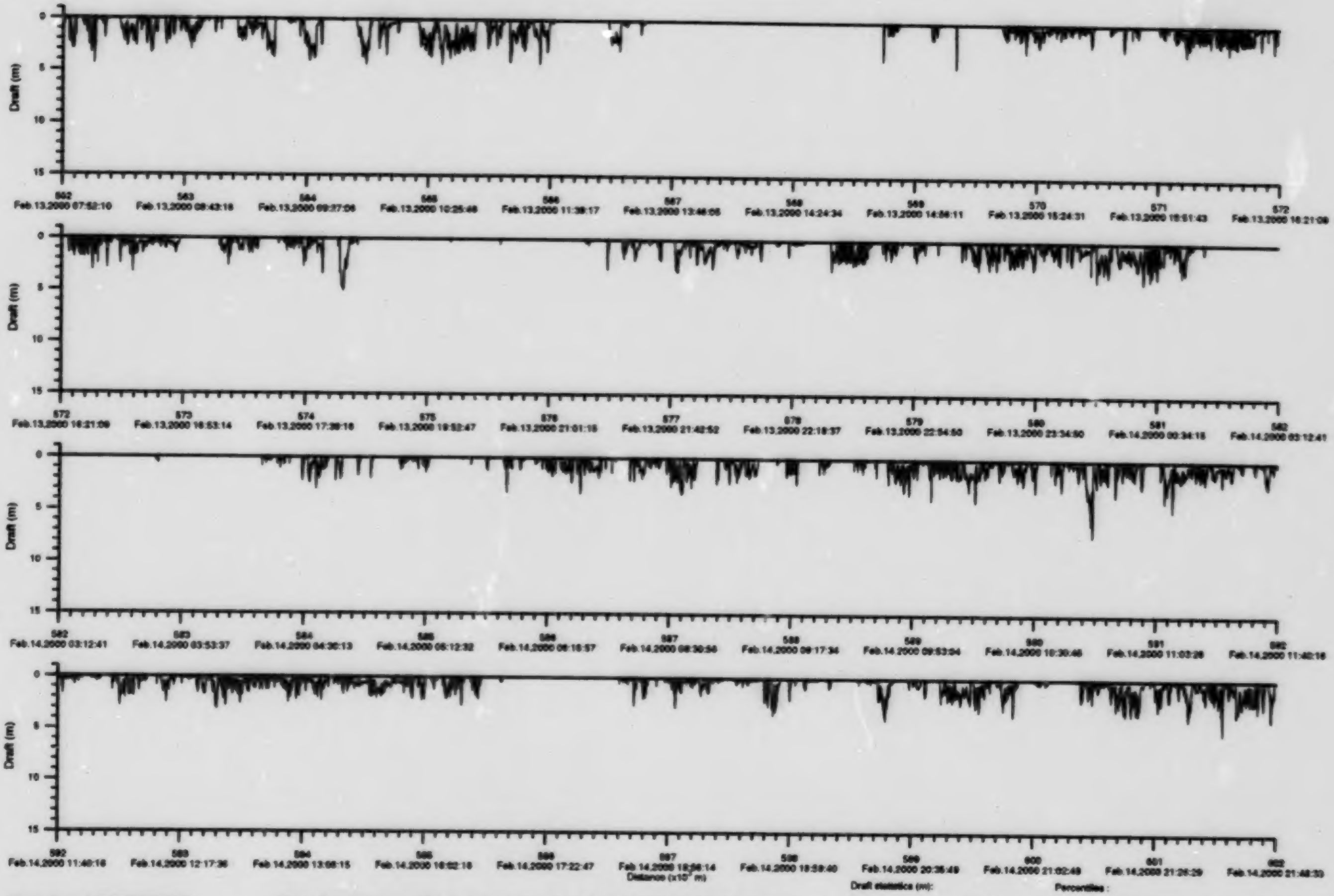
Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/12 09:49:46.81 to 2000/02/13 07:52:10.08 GMT

Draft statistics (m):

Mean = 1.22
Min = -0.06
Max = 13.86
StdDev = 1.22

Percentiles:

5%	0.11	Ice =	77.8 %
50%	0.84	Open Water =	22.2 %
95%	3.40	No Data =	0.0 %



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/13 07:52:10.08 to 2000/02/14 21:48:33.09 GMT

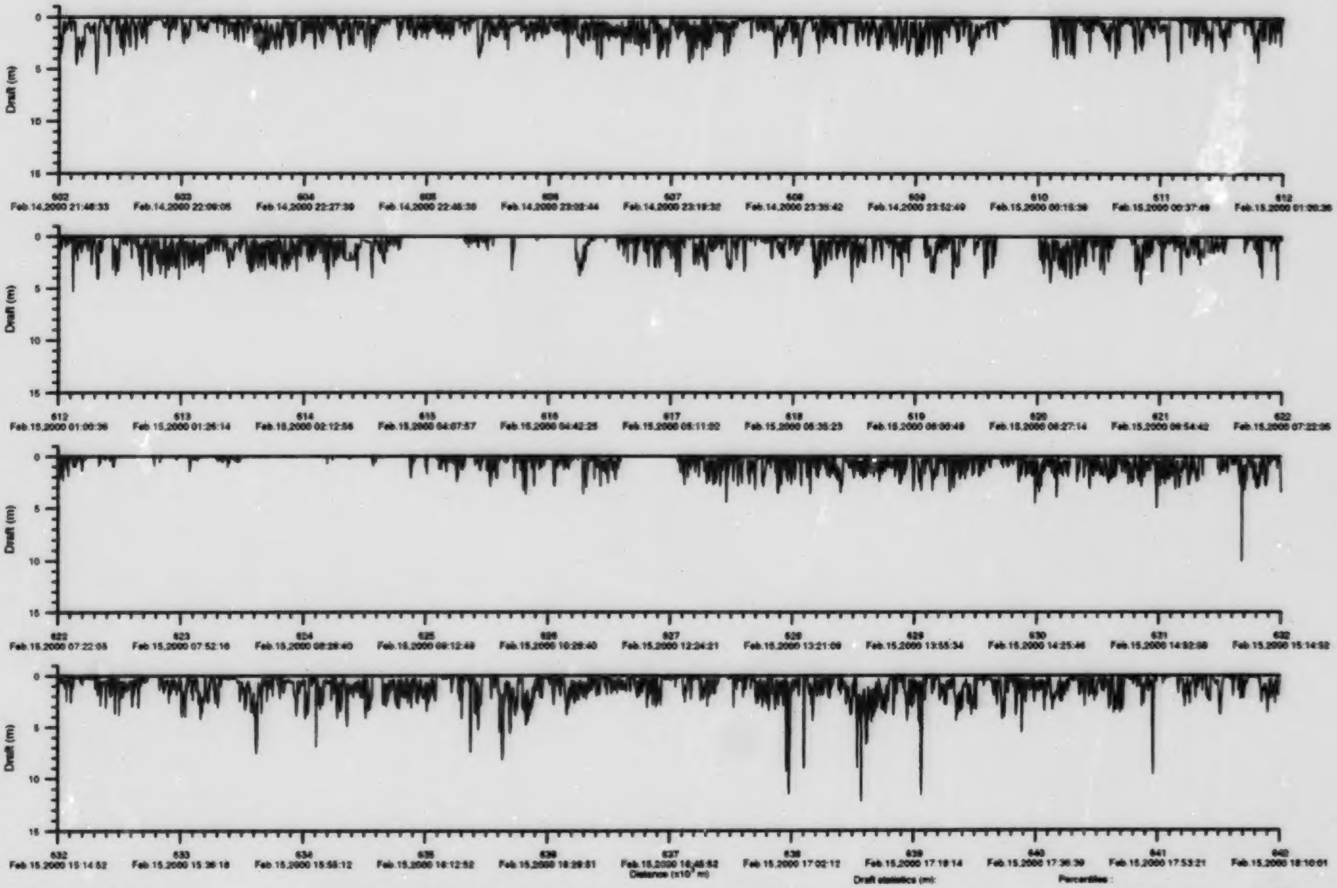
Draft statistics (m):

Mean = 0.80
Min = 0.00
Max = 7.33
StdDev = 0.78

Percentiles :

5% : 0.10 Ice = 65.9%
50% : 0.52 Open Water = 34.1%
95% : 2.34 No Data = 0.0%

Filename: pa2000ips18_draft_R_Distance.dat



Draft statistics (m):

Mean = 1.01
Min = 0.00
Max = 12.22
StdDev = 0.96

Percentiles :

5% : 0.13 Ice = 88.1 %
50% : 0.89 Open Water = 11.9 %
95% : 2.84 No Data = 0.0 %

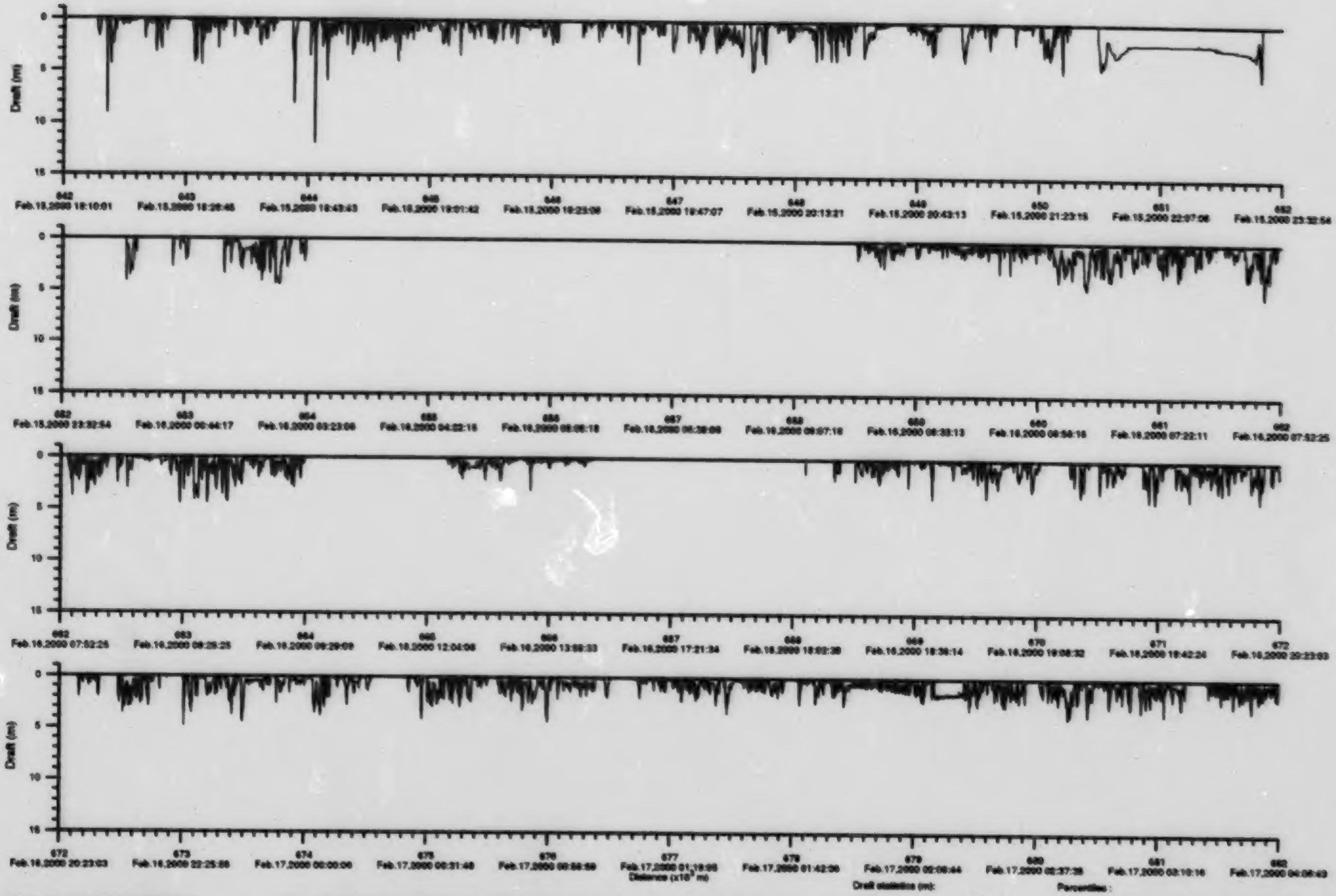
Filename [illegible]

Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/14 21:48:33.09 to 2000/02/15 18:10:00.74 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/15 18:10:00.74 to 2000/02/17 04:06:43.33 GMT

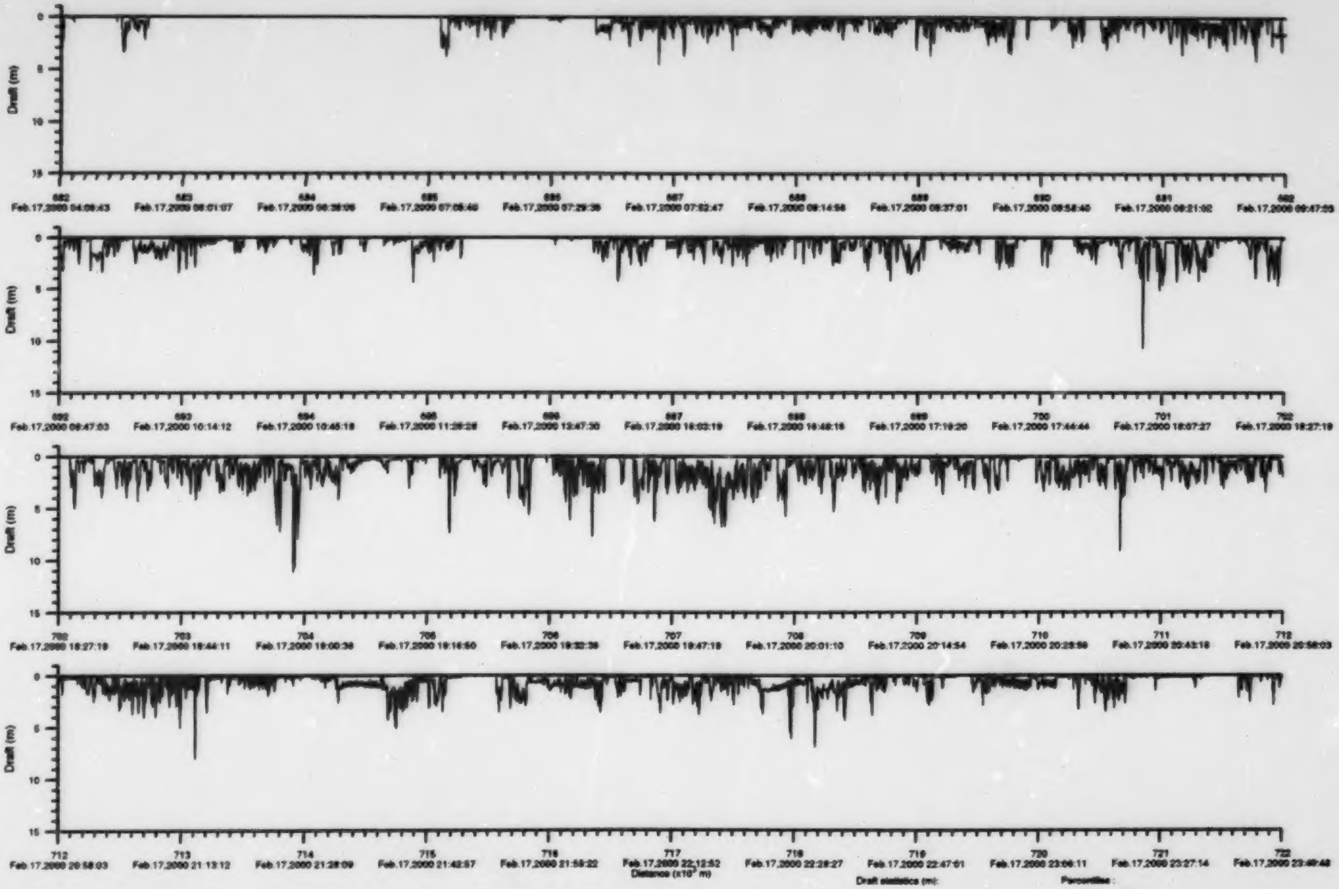
Draft statistics (m):

Mean = 0.87
Min = -0.01
Max = 11.87
StdDev = 0.85

Percentiles :

5% : 0.11 Ice = 71.8%
50% : 0.58 Open Water = 28.2%
95% : 2.58 No Data = 0.0%

Filename: [illegible]



Draft statistics (m):

Mean	=	0.90
Min	=	0.00
Max	=	11.12
StdDev	=	0.90

Percentiles :

5% :	0.13	Ice	=	87.2%
50% :	0.60	Open Water	=	12.8%
95% :	2.70	No Data	=	0.0%

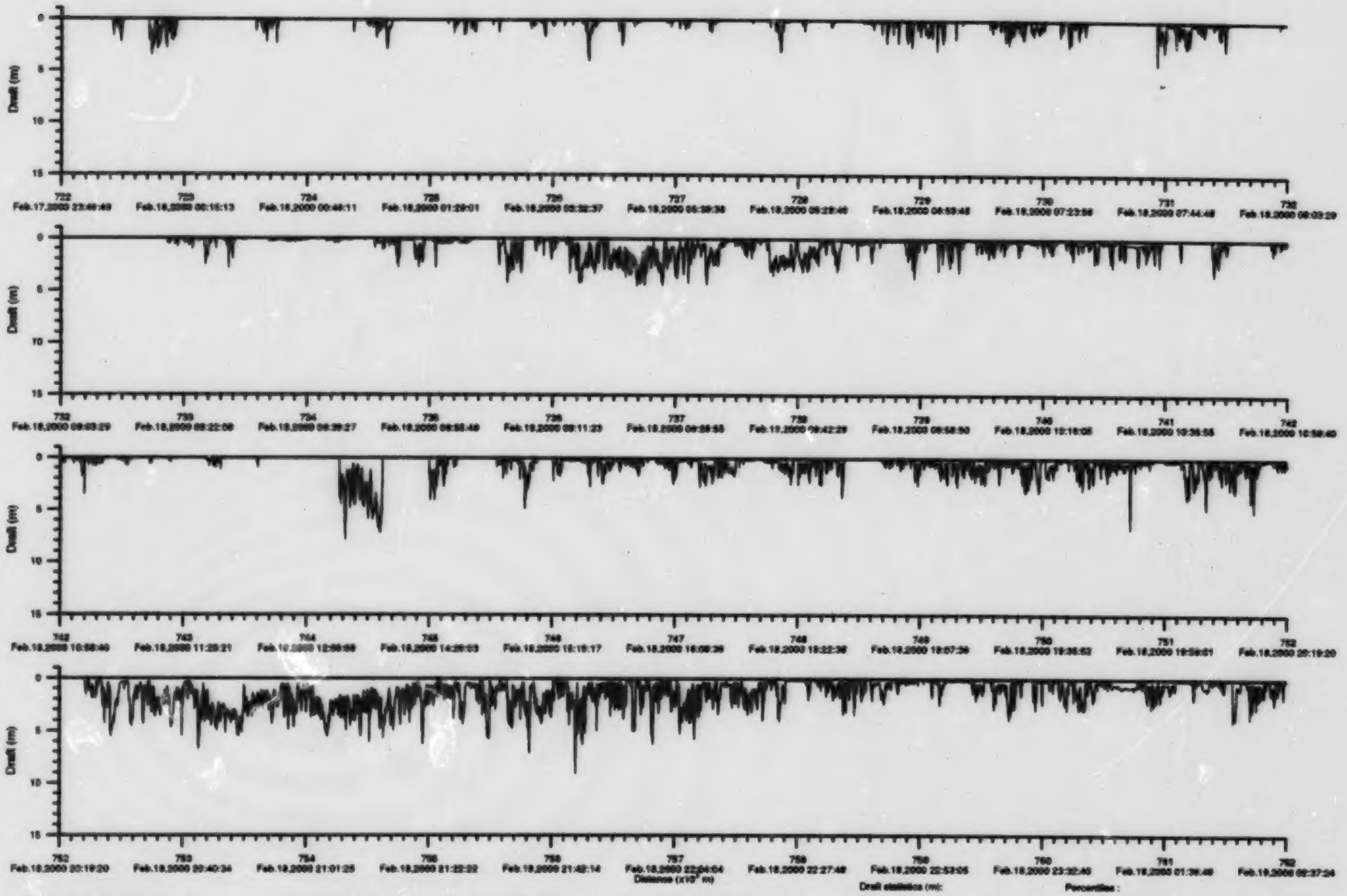
Filename: [illegible]

Experiment: BCD2000802

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/17 04:06:43.33 to 2000/02/17 23:49:48.40 GMT



Draft statistics (m):

Mean = 1.00
Min = -0.00
Max = 9.08
StdDev = 1.08

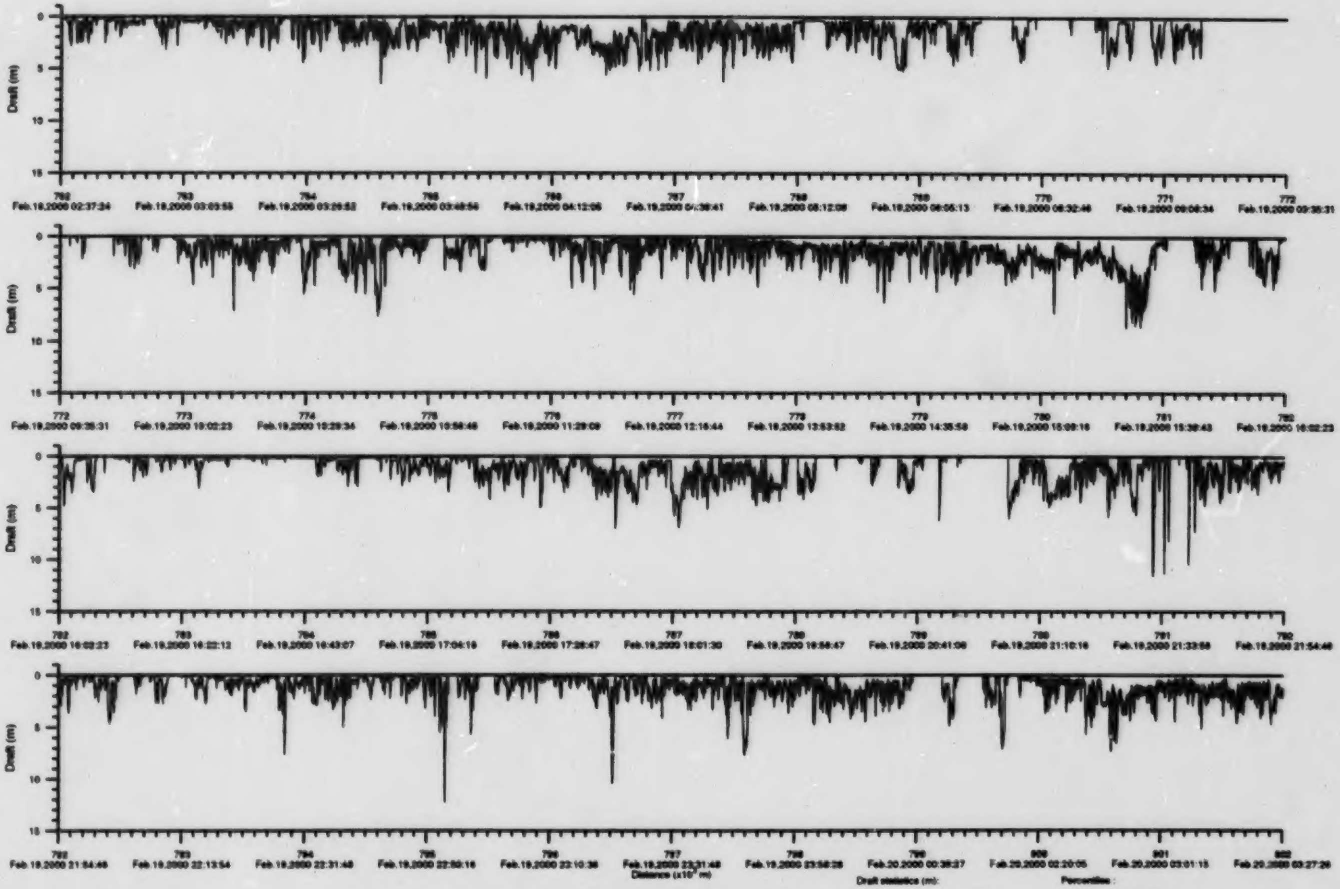
Percentiles :

5% : 0.12 Ice = 78.3%
50% : 0.84 Open Water = 21.7%
95% : 3.27 No Data = 0.0%

Filename: ps2000pc19_draft_N_Distance.dat

Experiment: BCD2000902 Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Instrument: IPS4-1018 Date: 2000/02/17 23:49:48.40 to 2000/02/19 02:37:23.78 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/19 02:37:23.78 to 2000/02/20 03:27:26.44 GMT

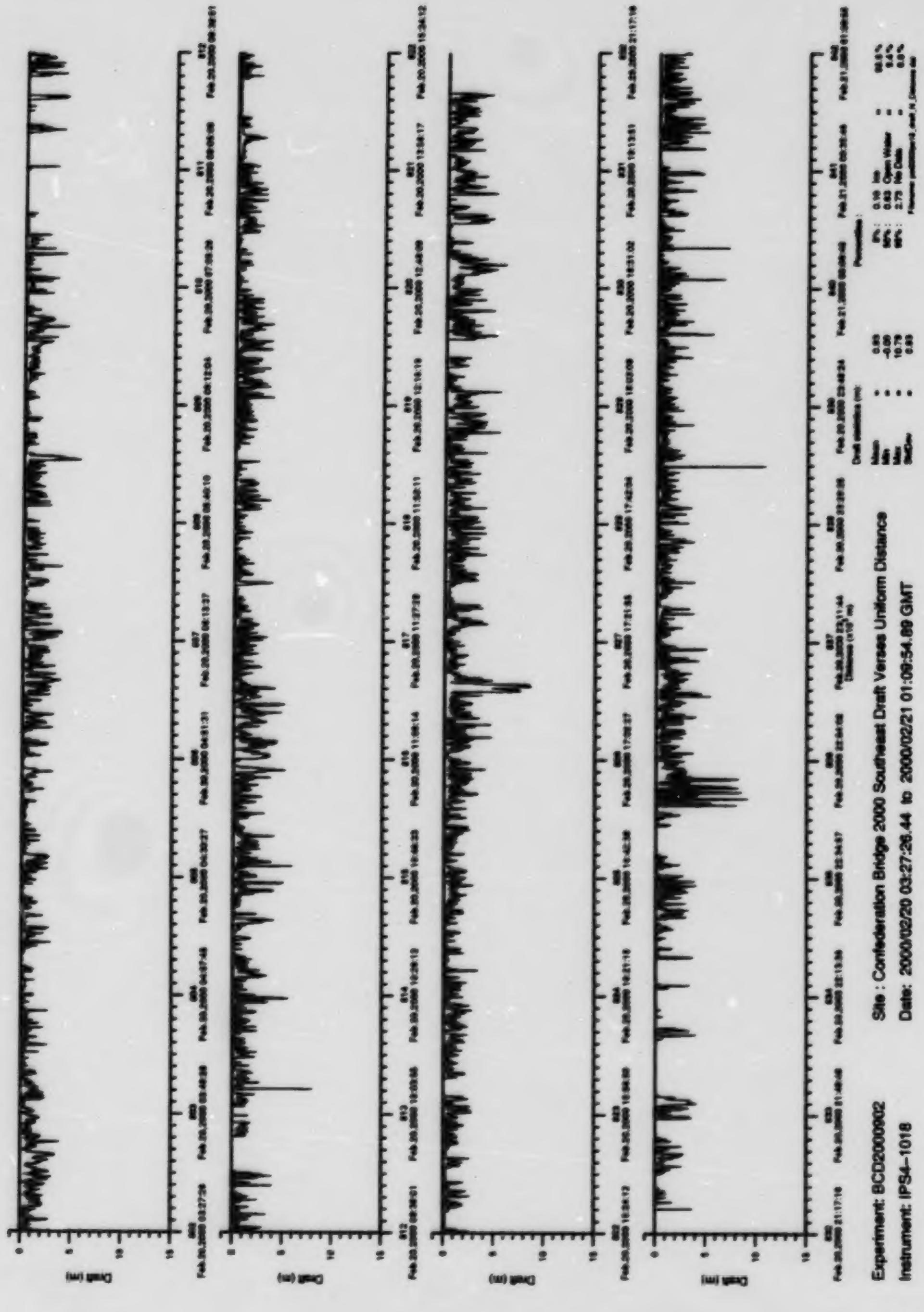
Draft statistics (m):

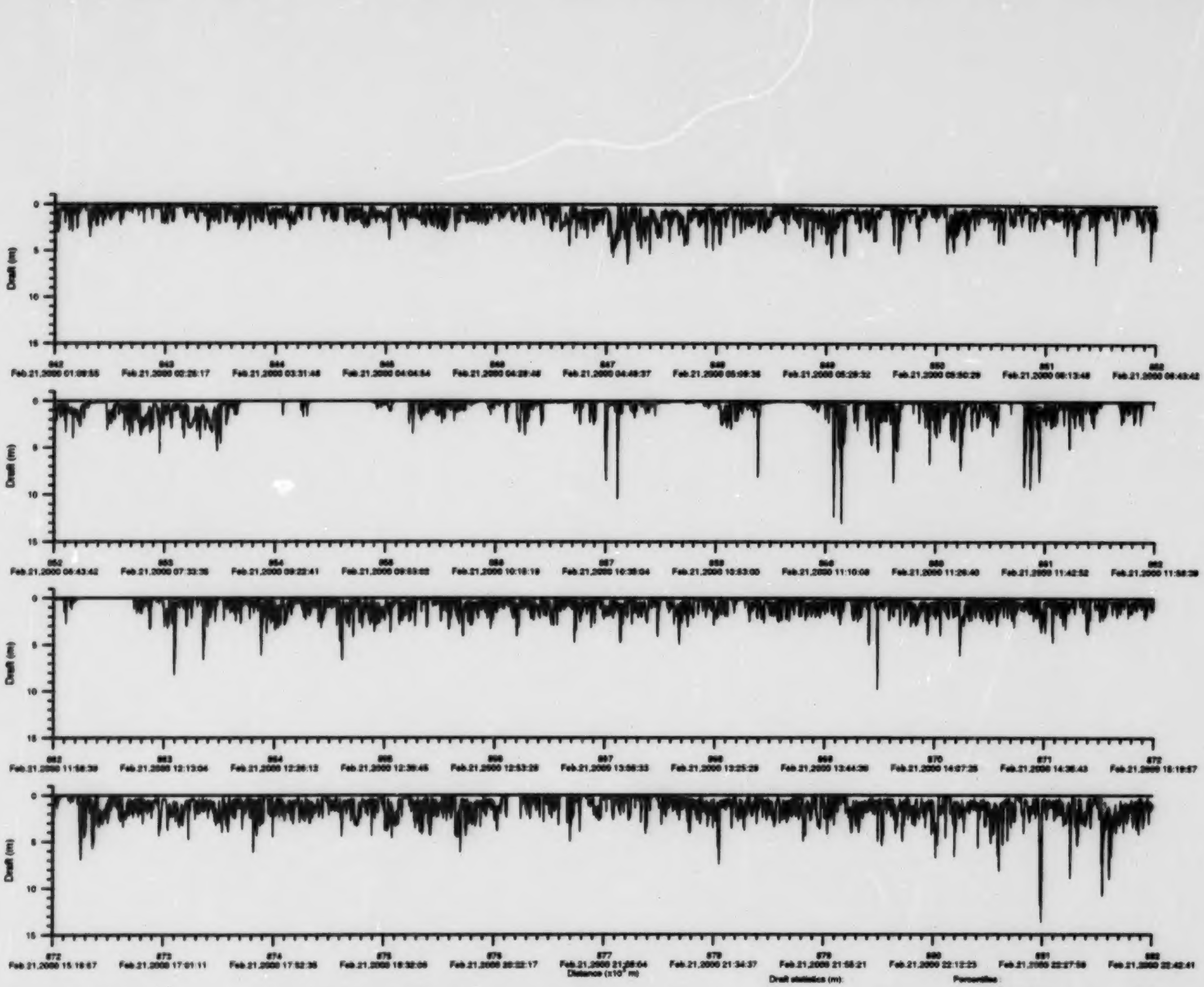
Mean = 1.34
Min = -0.00
Max = 12.25
StdDev = 1.21

Percentiles :

5% : 0.15 Ice = 90.5 %
50% : 0.98 Open Water = 9.5 %
95% : 3.65 No Data = 0.0 %

Filename: [illegible]


Draft (m)
Experiment: BCD2000902
Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Instrument: IPS4–1018
Date: 2000/02/20 03:27:26.44 to 2000/02/21 01:09:54.89 GMT



Experiment: BCD2000902
Instrument: IPS4–1018

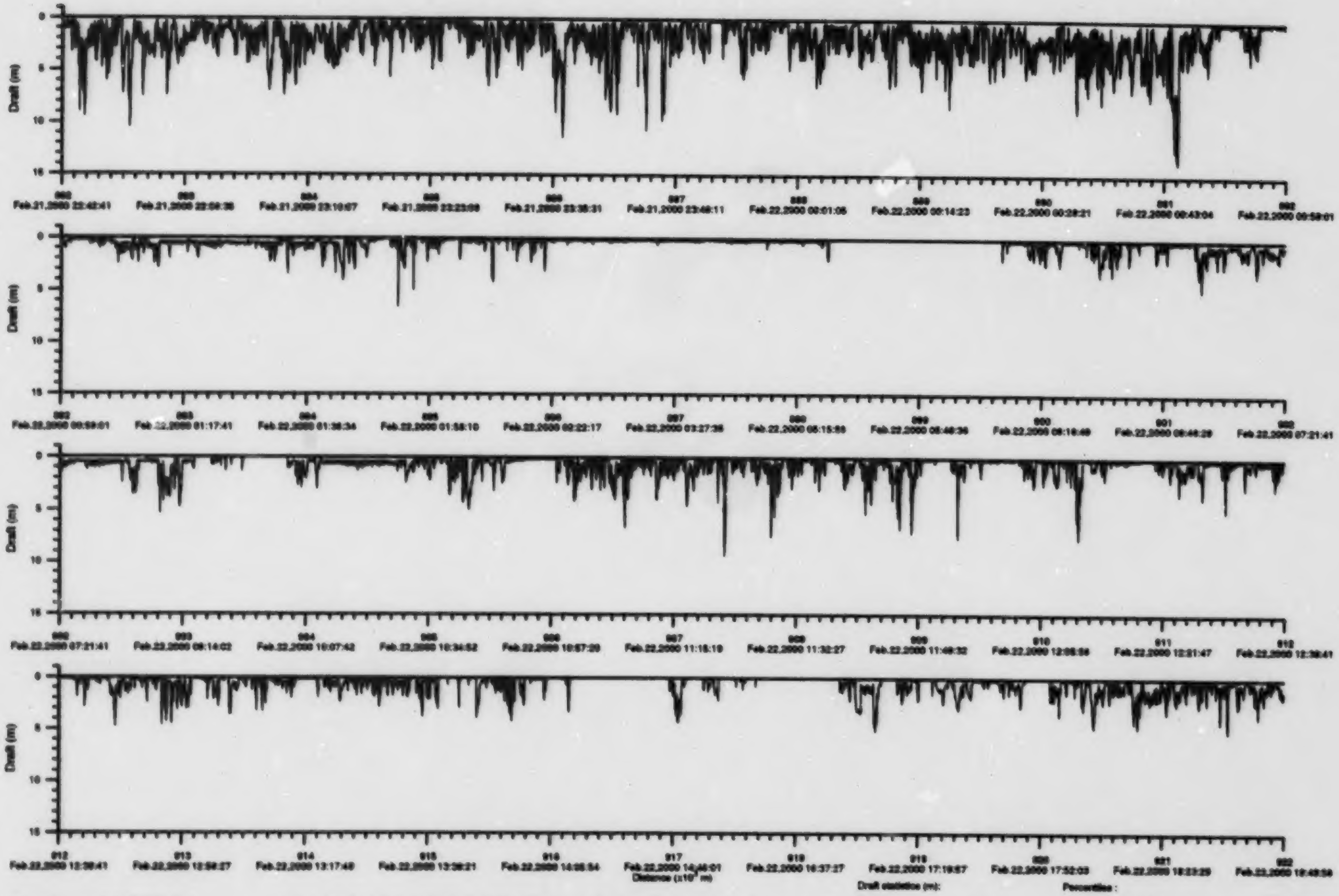
Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/21 01:09:54.89 to 2000/02/21 22:42:41.32 GMT

Draft statistics (m):

Mean = 1.08
Min = -0.01
Max = 13.68
StdDev = 1.06

Percentiles :

5% : 0.14 Ice = 93.9 %
50% : 0.77 Open Water = 6.1 %
95% : 3.01 No Data = 0.0 %



Experiment: BCD2000902

Instrument: IPS4-1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

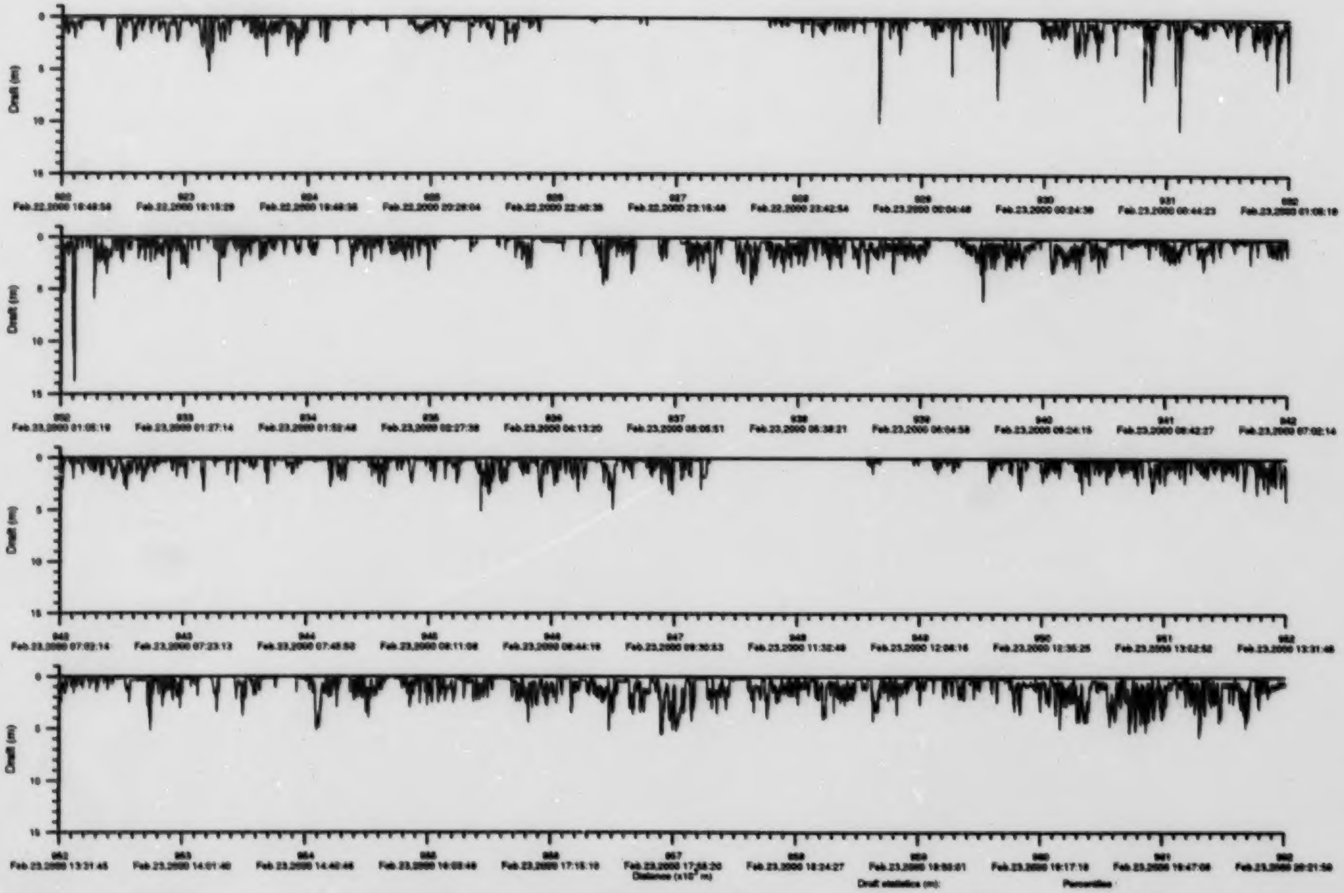
Date: 2000/02/21 22:42:41.32 to 2000/02/22 18:48:56.10 GMT

Draft statistics (m):

Mean = 1.07
Min = -0.02
Max = 13.68
StdDev = 1.25

Percentiles :

5% : 0.15 Ice = 99.4 %
50% : 0.58 Open Water = 0.6 %
95% : 3.58 No Data = 0.0 %



Draft statistics (m):

Mean = 0.82
Min = 0.00
Max = 13.75
StdDev = 0.87

Percentiles :

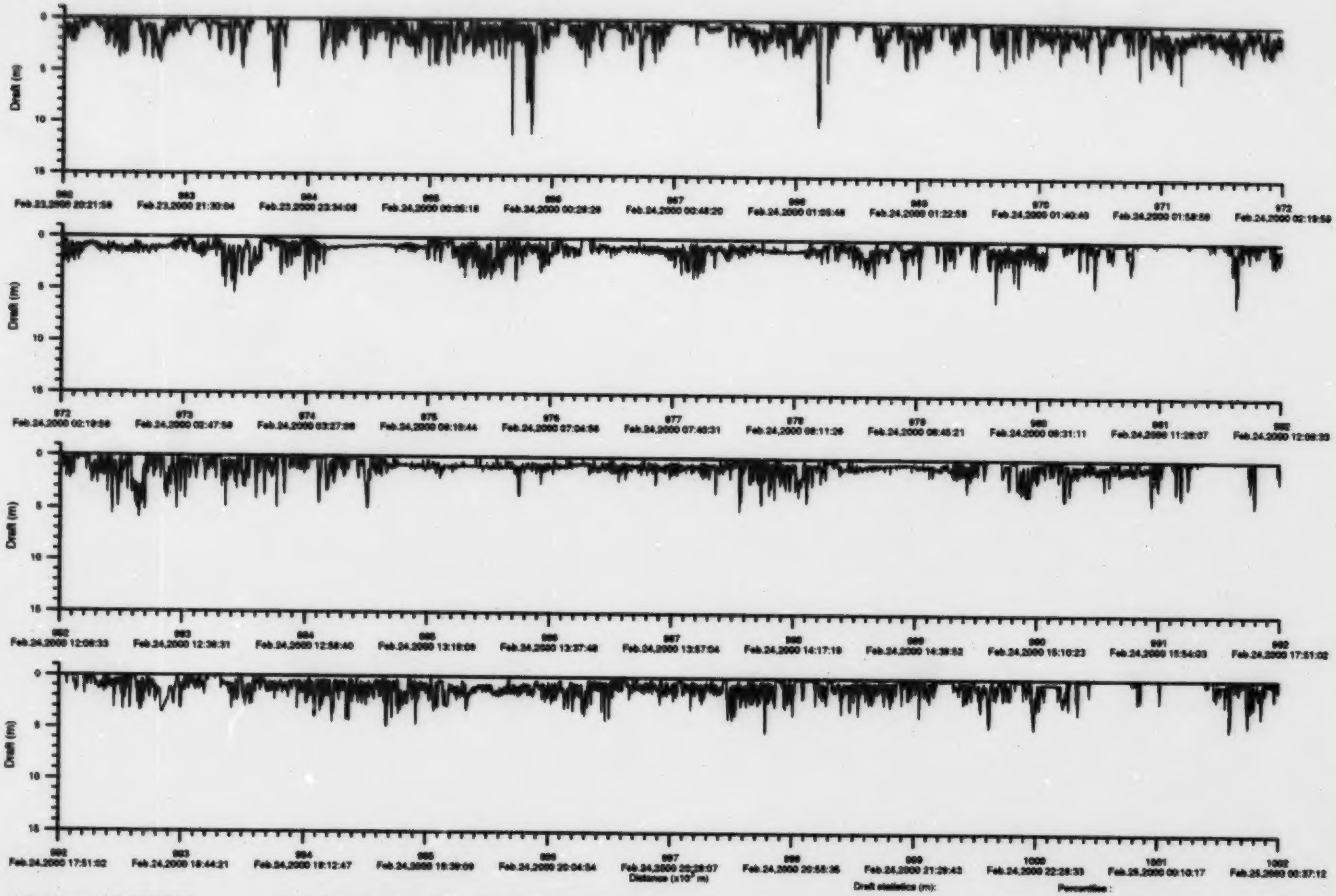
5% : 0.13 Ice = 87.3%
50% : 0.58 Open Water = 12.7%
95% : 2.01 No Data = 0.0%

Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/22 18:48:56.10 to 2000/02/23 20:21:58.75 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/23 20:21:58.75 to 2000/02/25 00:37:11.60 GMT

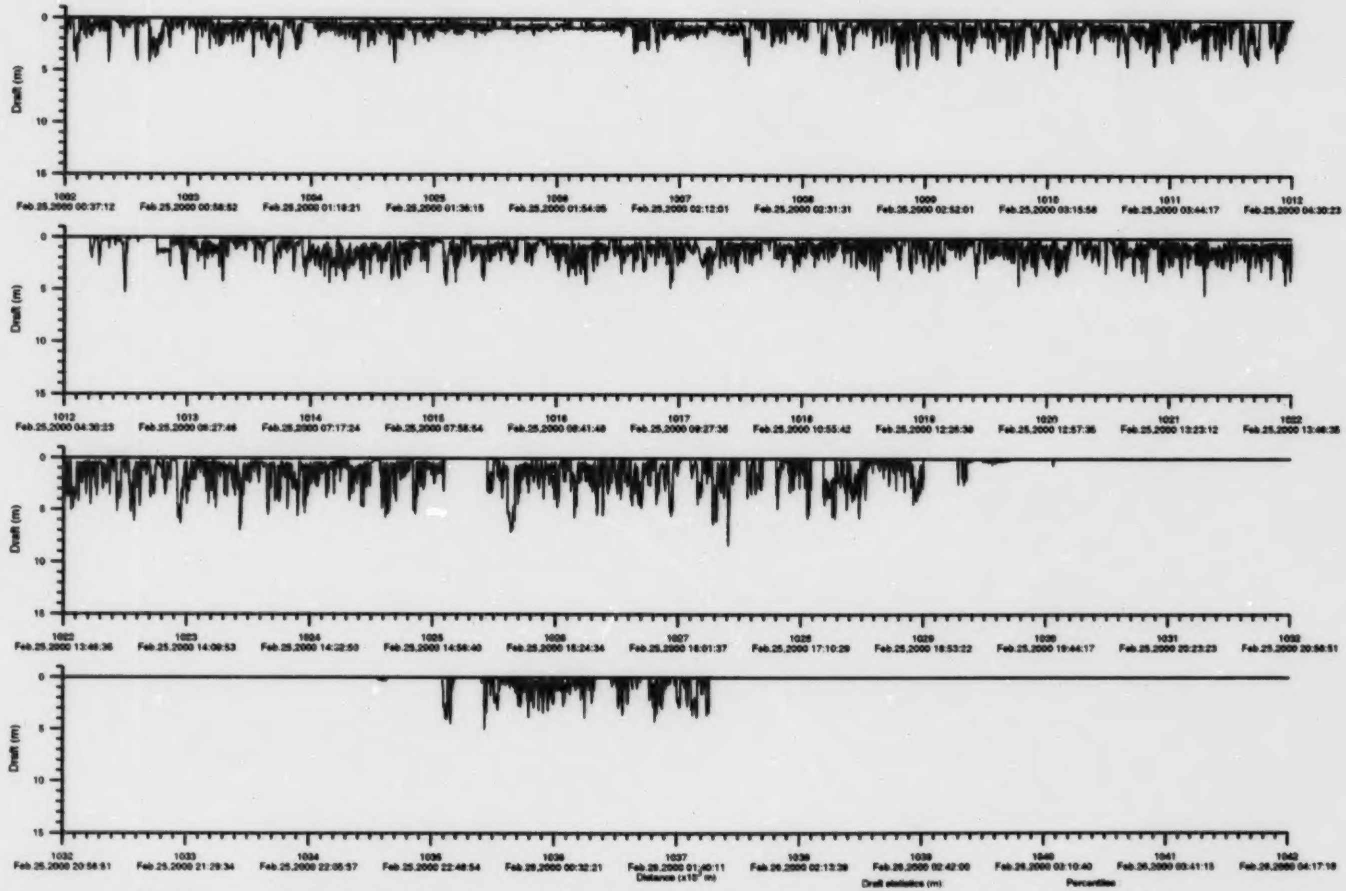
Draft statistics (m):

Mean = 1.03
Min = –0.00
Max = 11.04
StdDev = 0.83

Percentiles :

5% : 0.18 Ice = 94.9%
50% : 0.86 Open Water = 5.1%
95% : 2.65 No Data = 0.0%

Filename: pe2000ps18_draft_N_Distance.dat



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/25 00:37:11.60 to 2000/02/26 04:17:17.99 GMT

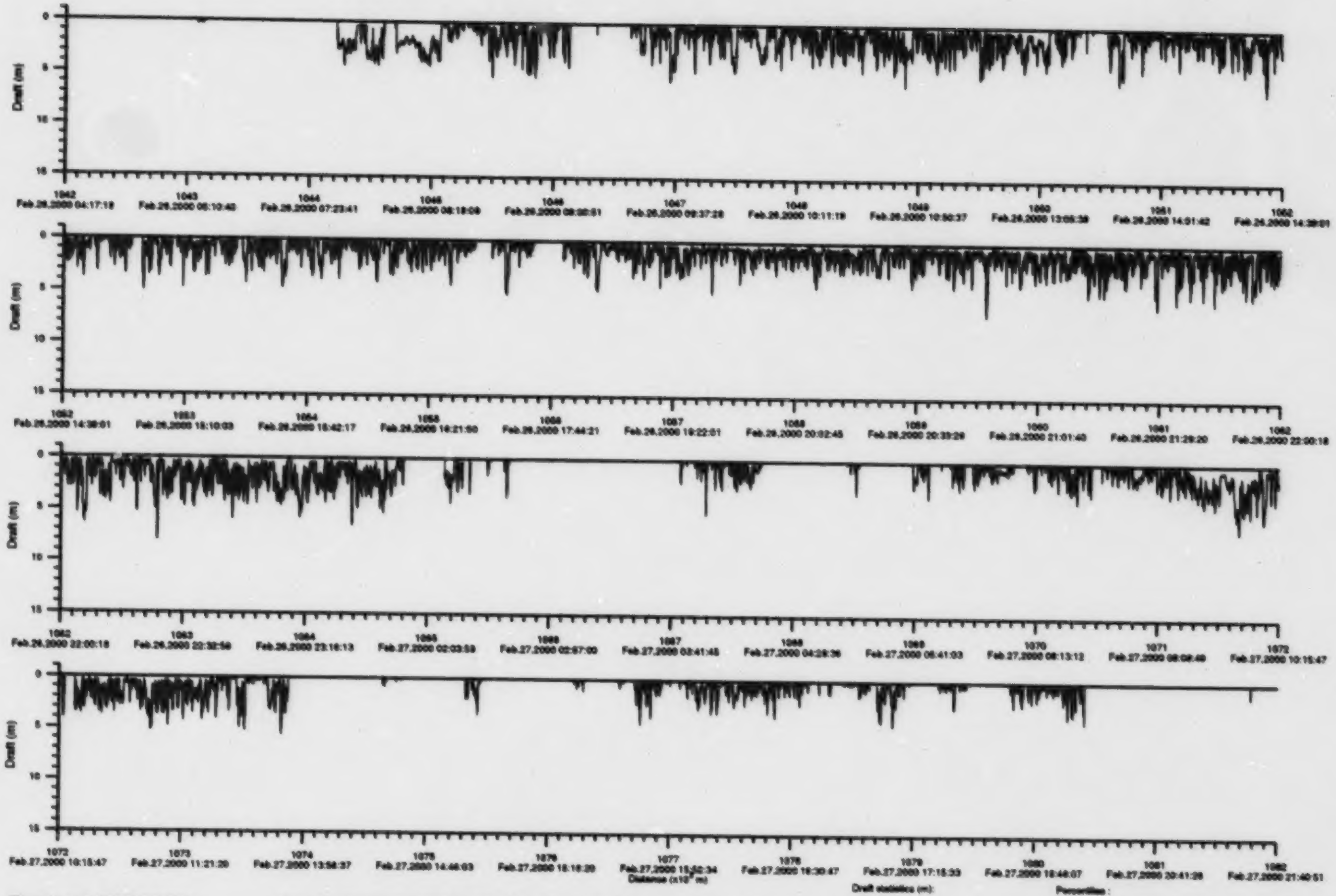
Draft statistics (m):

Mean = 1.16
Min = -0.00
Max = 8.38
StdDev = 1.01

Percentiles :

5% : 0.19 Ice = 73.4%
50% : 0.84 Open Water = 26.6%
95% : 3.24 No Data = 0.0%

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/02/26 04:17:17.99 to 2000/02/27 21:40:50.76 GMT

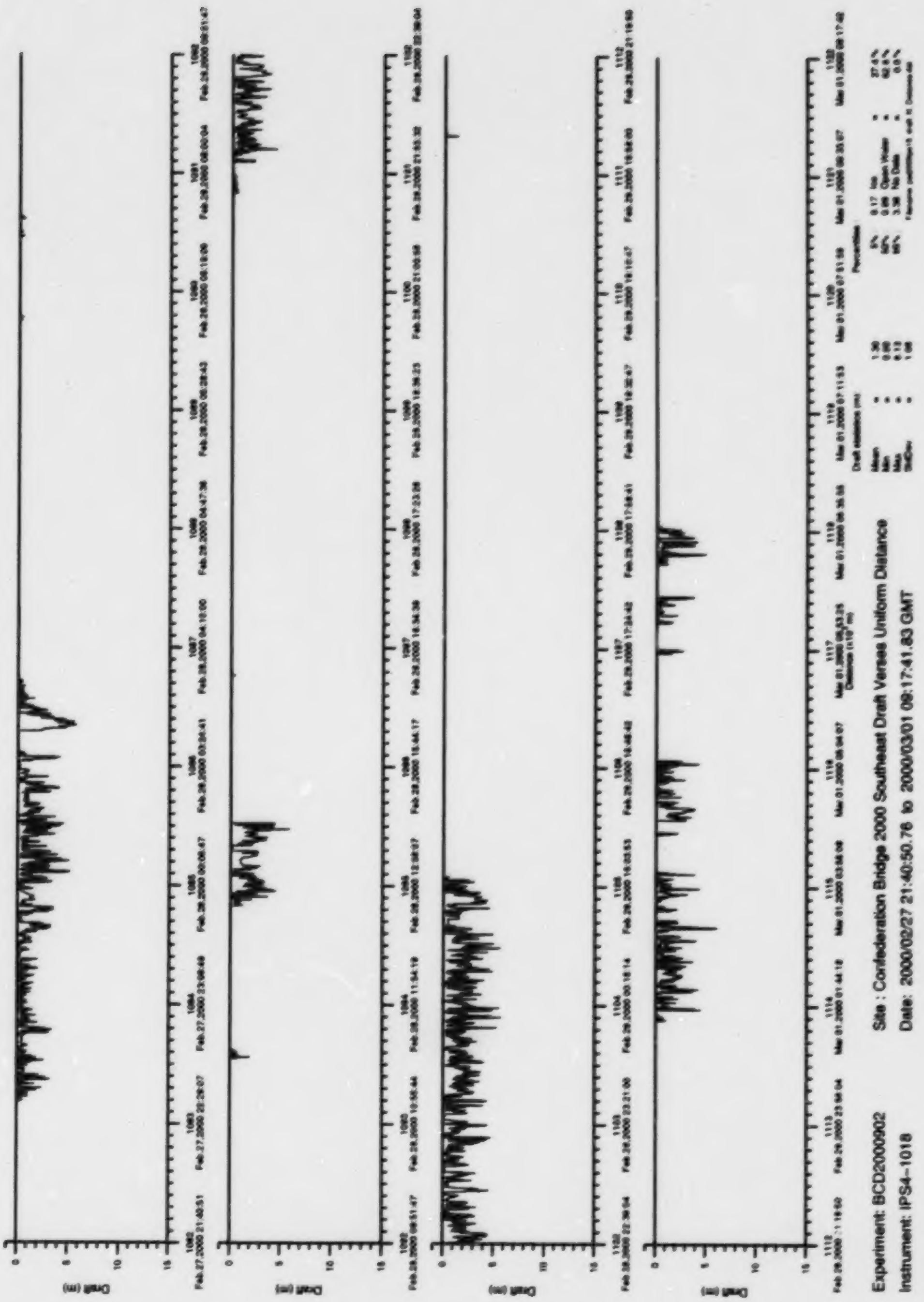
Draft statistics (m):

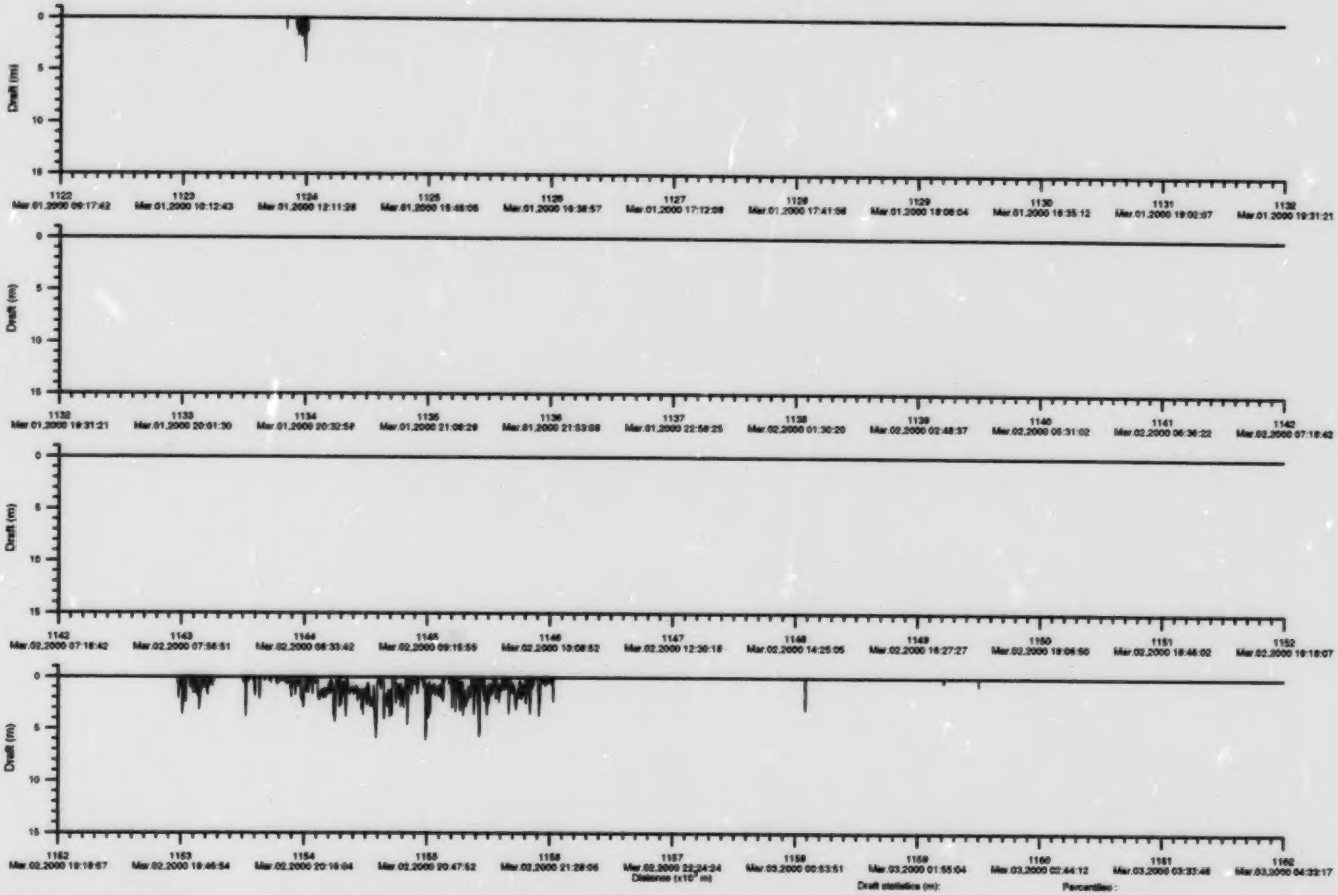
Mean	=	1.22
Min	=	0.00
Max	=	8.01
StdDev	=	1.08

Percentiles :

5% :	0.15	Ice	=	75.4%
50% :	0.82	Open Water	=	24.6%
95% :	3.42	No Data	=	0.0%

Filename: [illegible]


Draft (m)
0
5
10
15
Experiment: BCD2000902
Instrument: IPS4-1018
Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/02/27 21:40:50.76 to 2000/03/01 09:17:41.83 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/03/01 09:17:41.83 to 2000/03/03 04:33:17.32 GMT

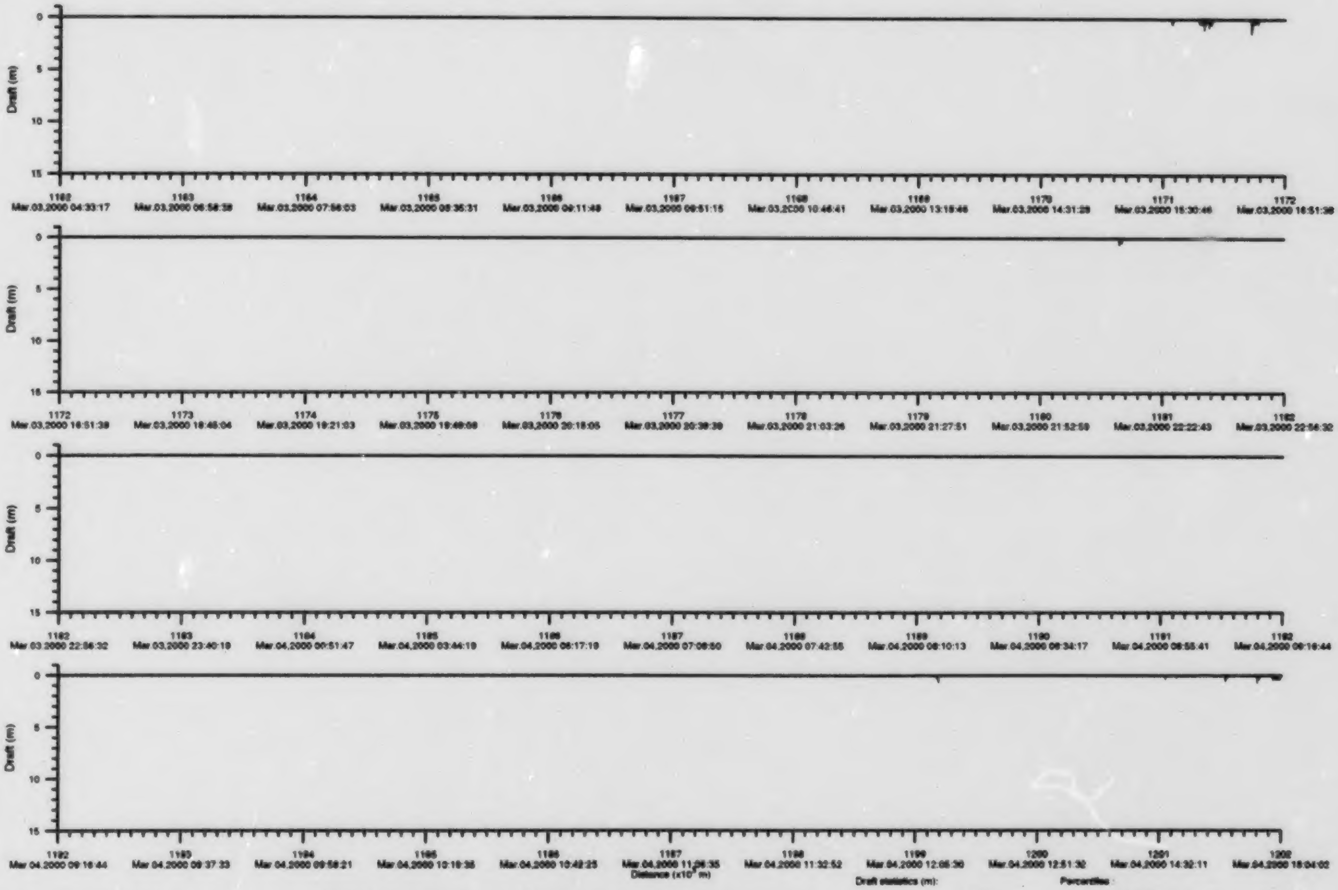
Draft statistics (m):

Mean = 1.14
Min = 0.01
Max = 6.07
StdDev = 0.99

Percentiles :

5% : 0.12 Ice = 11.6 %
50% : 0.88 Open Water = 88.4 %
95% : 3.10 No Data = 0.0 %

Filename: ps2000ips18_draft_N_Distance.dat



Experiment: BCD2000902

Instrument: IPS4-1016

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/03/03 04:33:17.32 to 2000/03/04 18:04:02.08 GMT

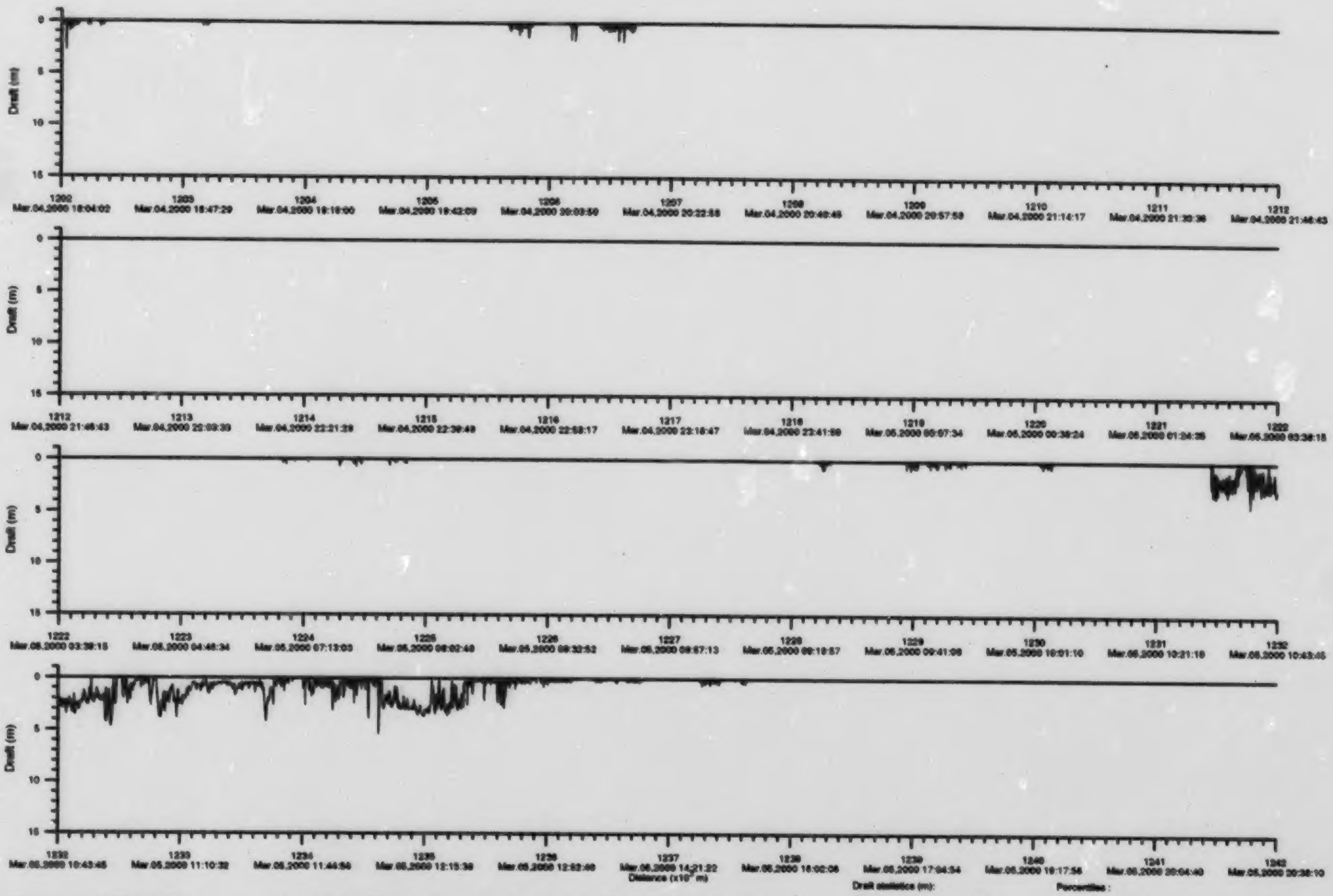
Draft statistics (m):

Mean	=	0.24
Min	=	0.01
Max	=	1.30
StdDev	=	0.15

Percentiles :

5% :	0.06	Ice	=	10.2 %
50% :	0.21	Open Water	=	89.8 %
95% :	0.47	No Data	=	0.0 %

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/03/04 18:04:02.08 to 2000/03/05 20:36:10.28 GMT

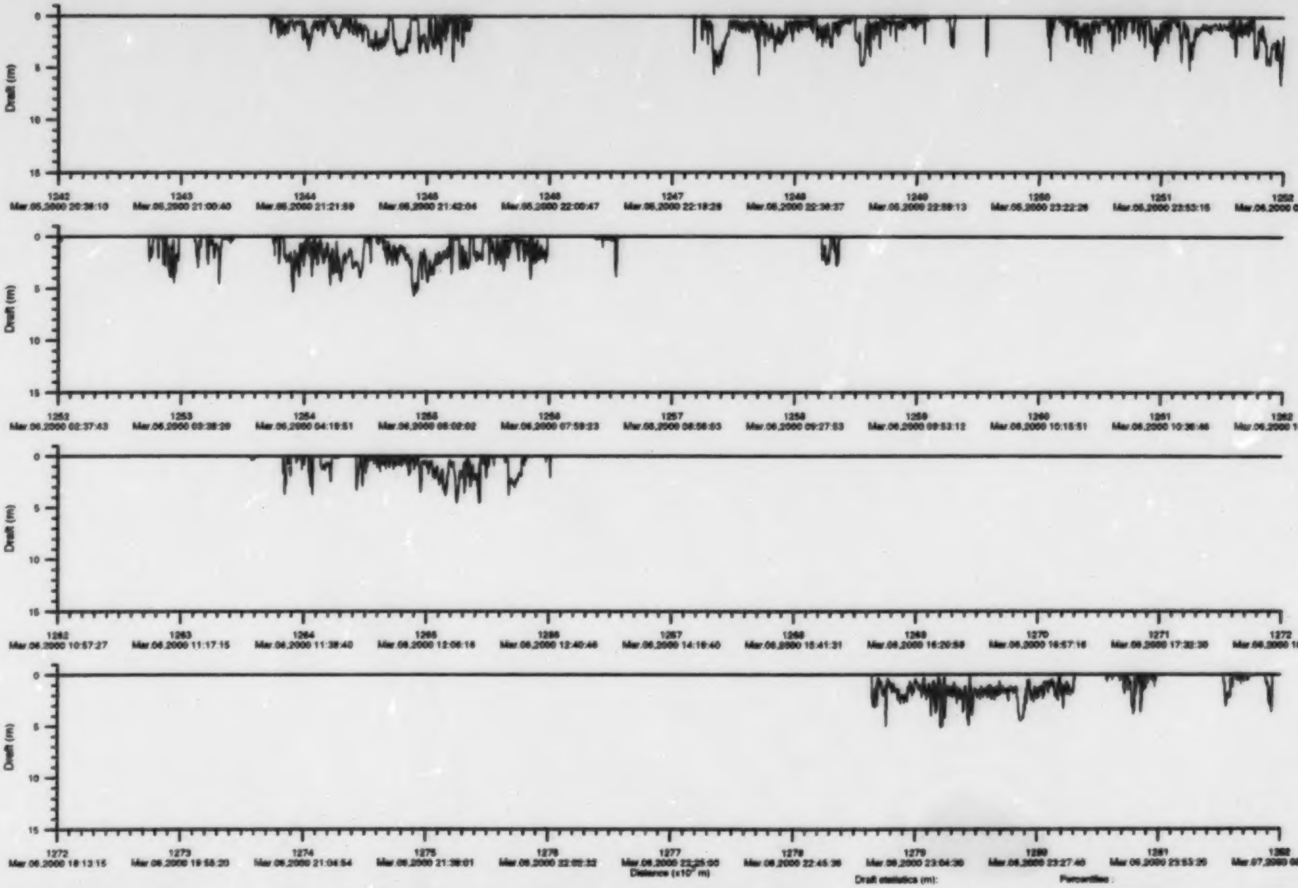
Draft statistics (m):

Mean = 0.89
Min = -0.00
Max = 5.35
StdDev = 1.01

Percentiles :

5% : 0.06 Ice = 52.0%
50% : 0.48 Open Water = 48.0%
95% : 2.99 No Data = 0.0%

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/03/05 20:36:10.28 to 2000/03/07 00:24:09.03 GMT

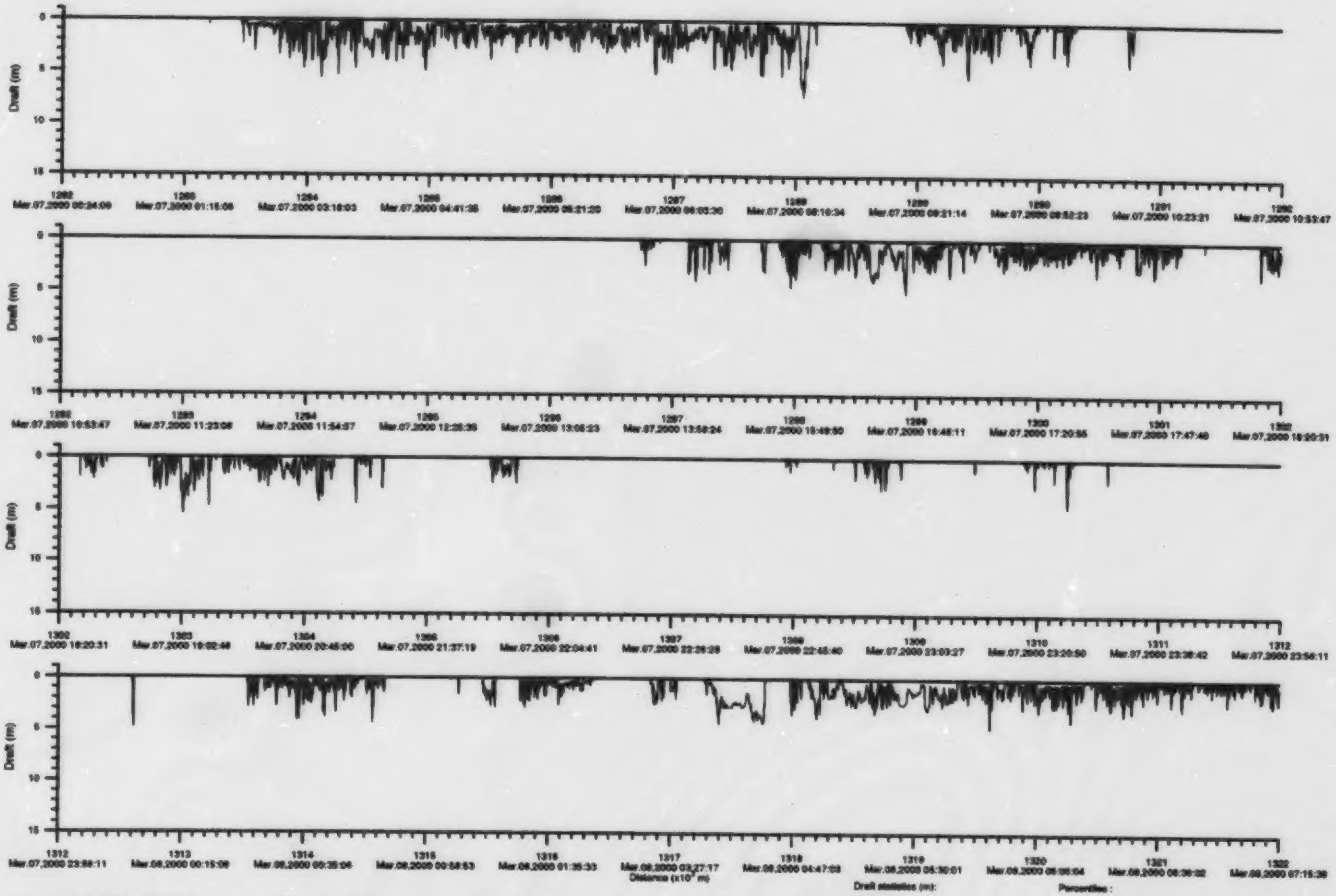
Draft statistics (m):

Mean = 1.38
Min = 0.00
Max = 6.58
StdDev = 1.09

Percentiles :

5% : 0.14 Ice = 37.2%
50% : 1.14 Open Water = 62.8%
95% : 3.56 No Data = 0.0%

Filename: [illegible]



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

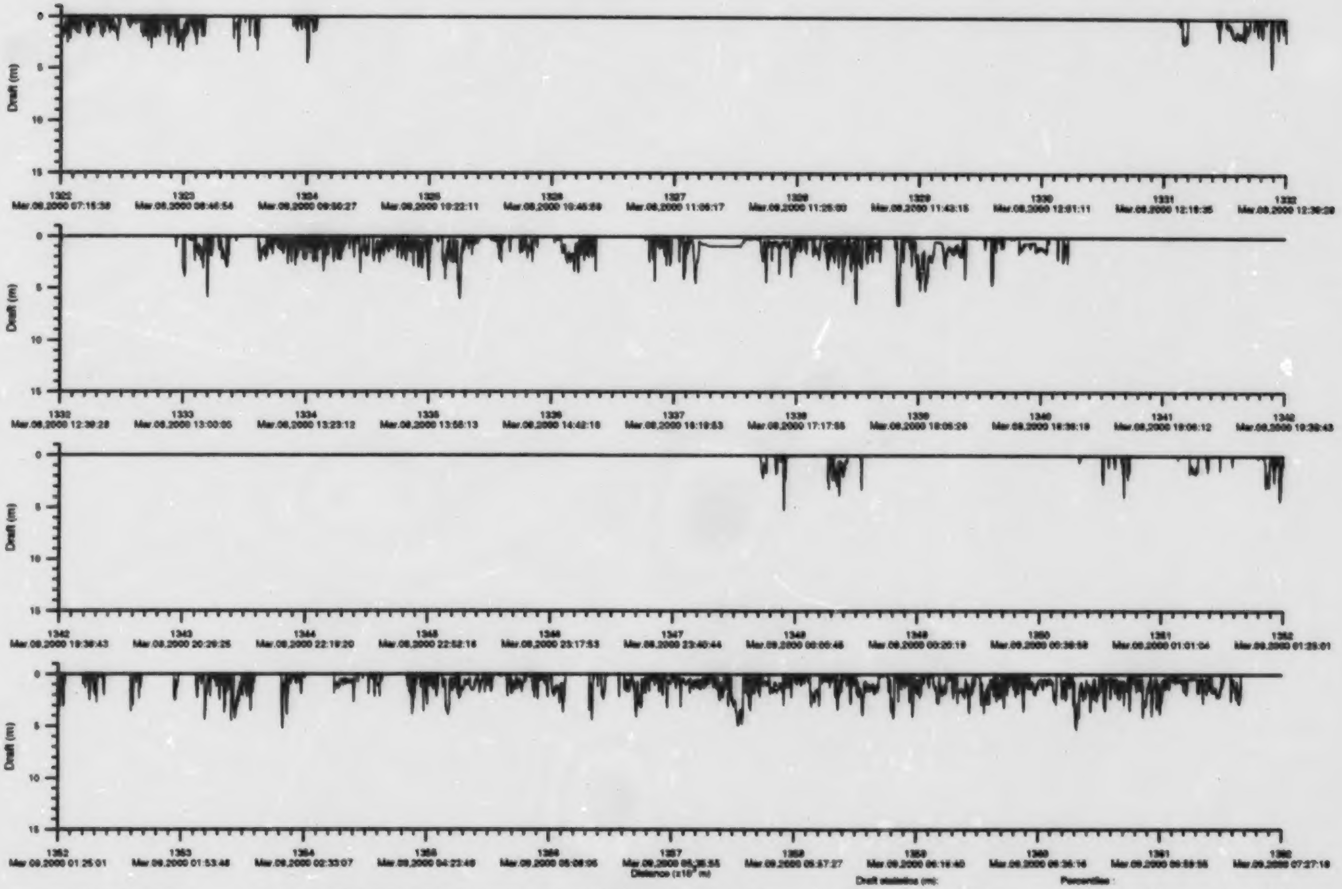
Date: 2000/03/07 00:24:09.03 to 2000/03/08 07:15:37.62 GMT

Draft statistics (m):

Mean	=	1.09
Min	=	0.00
Max	=	7.22
StdDev	=	0.94

Percentiles :

5% :	0.14	Ice	=	53.9%
50% :	0.79	Open Water	=	46.1%
95% :	2.92	No Data	=	0.0%



Draft statistics (m):

Mean = 1.03
Min = 0.00
Max = 6.62
StdDev = 0.81

Percentiles :

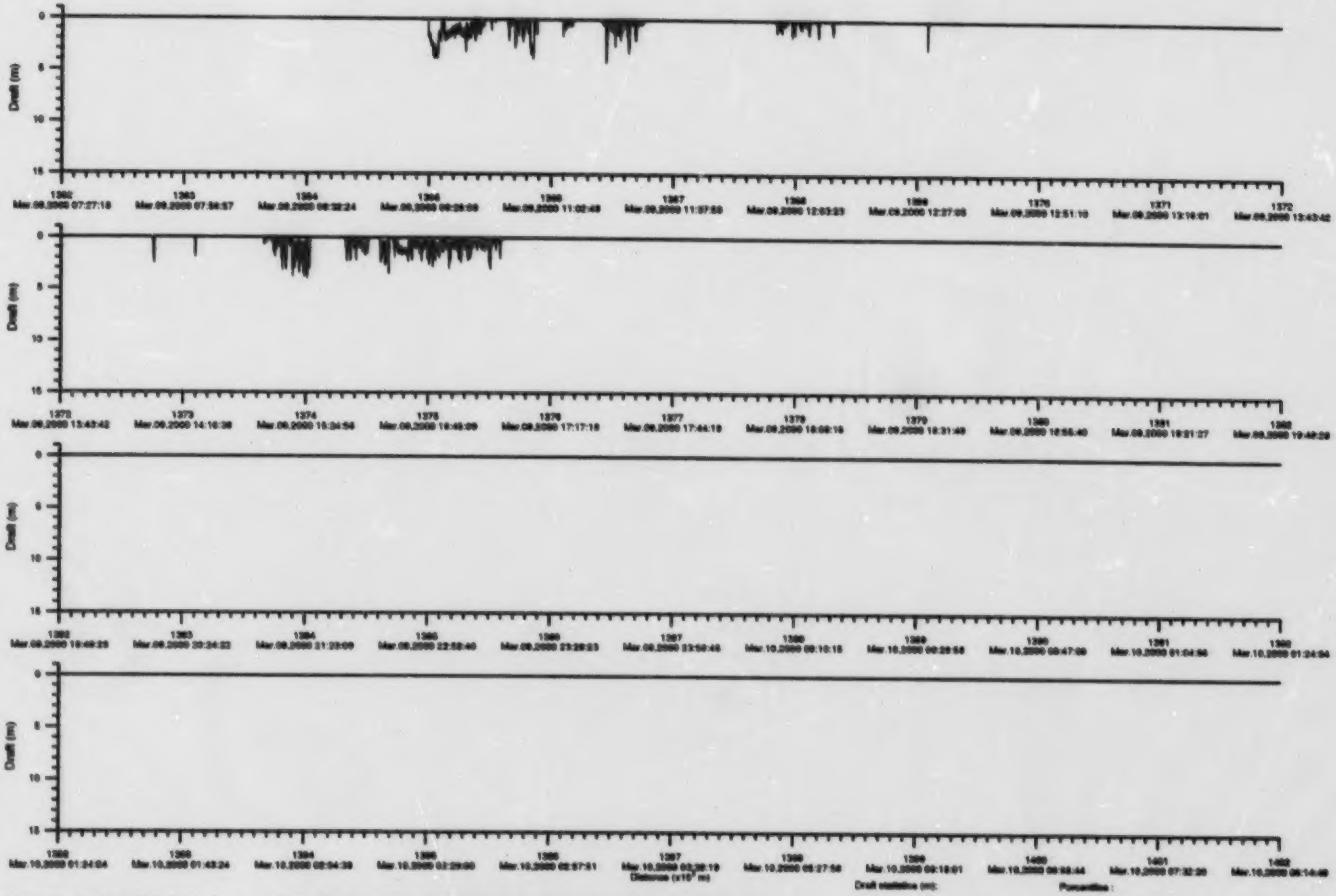
5% : 0.11 Ice = 50.7%
50% : 0.79 Open Water = 49.3%
95% : 2.80 No Data = 0.0%

Experiment: BCD2000902

Instrument: IPS4-1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

Date: 2000/03/08 07:15:37.62 to 2000/03/09 07:27:18.27 GMT



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

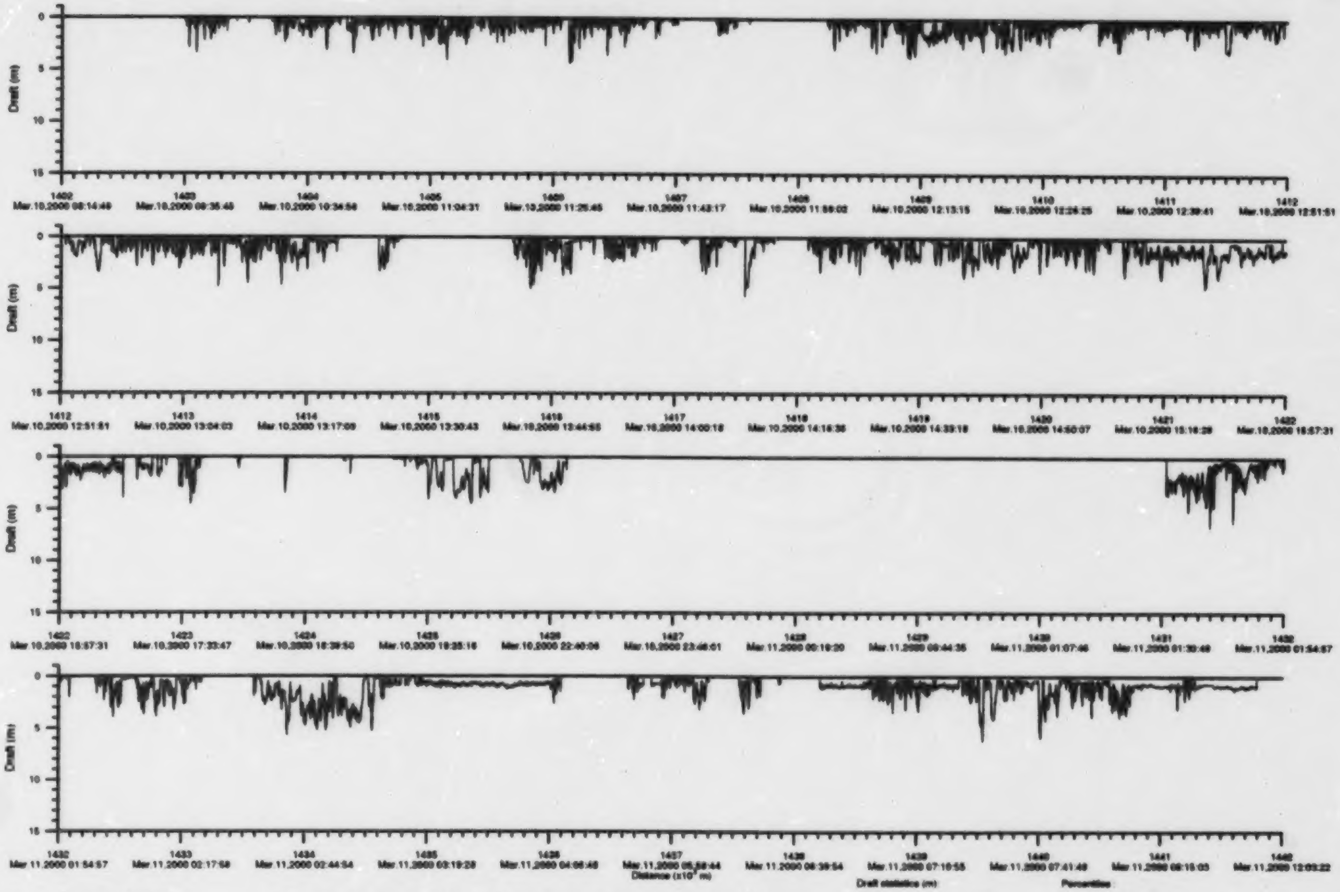
Date: 2000/03/09 07:27:18.27 to 2000/03/10 08:14:48.67 GMT

Draft statistics (m):

Mean = 0.81
Min = 0.01
Max = 4.22
StdDev = 0.81

Percentiles :

0% : 0.00 Ice = 16.7%
50% : 0.62 Open Water = 83.3%
95% : 2.66 No Data = 0.0%



Experiment: BCD2000902

Instrument: IPS4–1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance

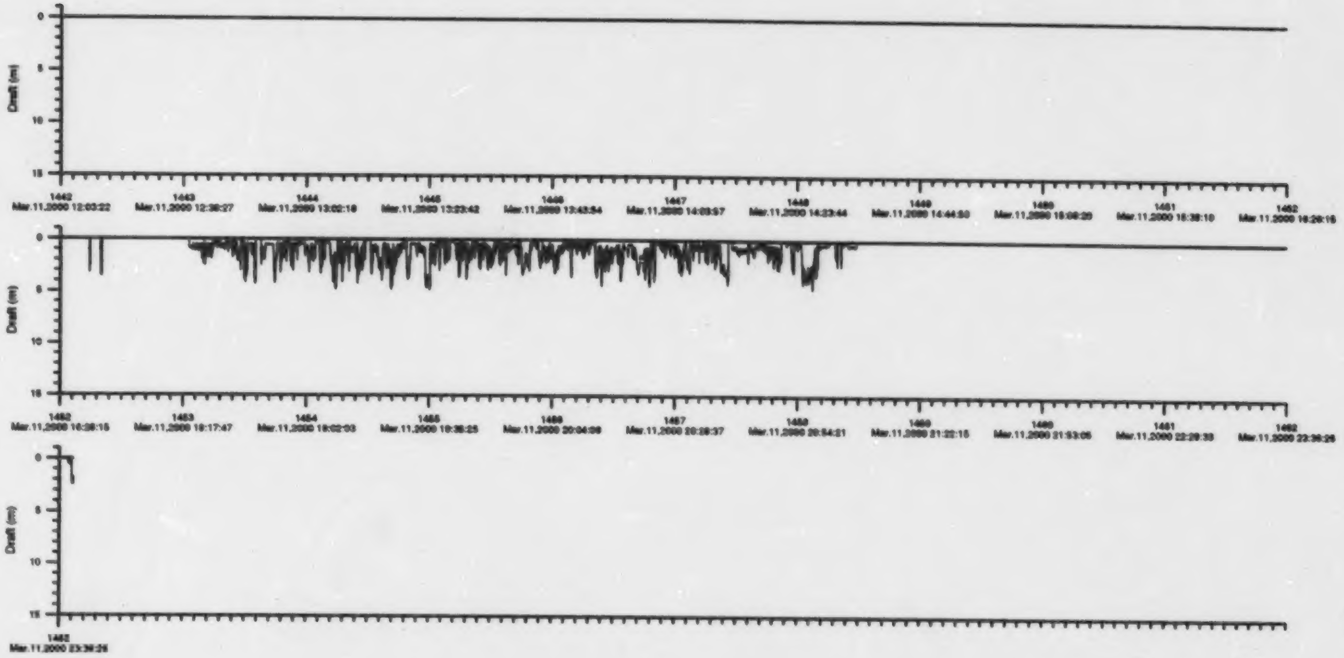
Date: 2000/03/10 08:14:48.67 to 2000/03/11 12:03:21.84 GMT

Draft statistics (m)

Mean = 0.96
Min = -0.03
Max = 6.66
StdDev = 0.90

Percentiles :

5% : 0.09 Ice = 75.1%
50% : 0.72 Open Water = 24.9%
95% : 2.91 No Data = 0.0%



Experiment: BCD2000902
Instrument: IPS4-1018

Site : Confederation Bridge 2000 Southeast Draft Verses Uniform Distance
Date: 2000/03/11 12:03:21.84 to 2000/03/11 23:59:45.75 GMT

Draft statistics (m):

Mean	=	1.21
Min	=	0.03
Max	=	4.82
StdDev	=	0.88

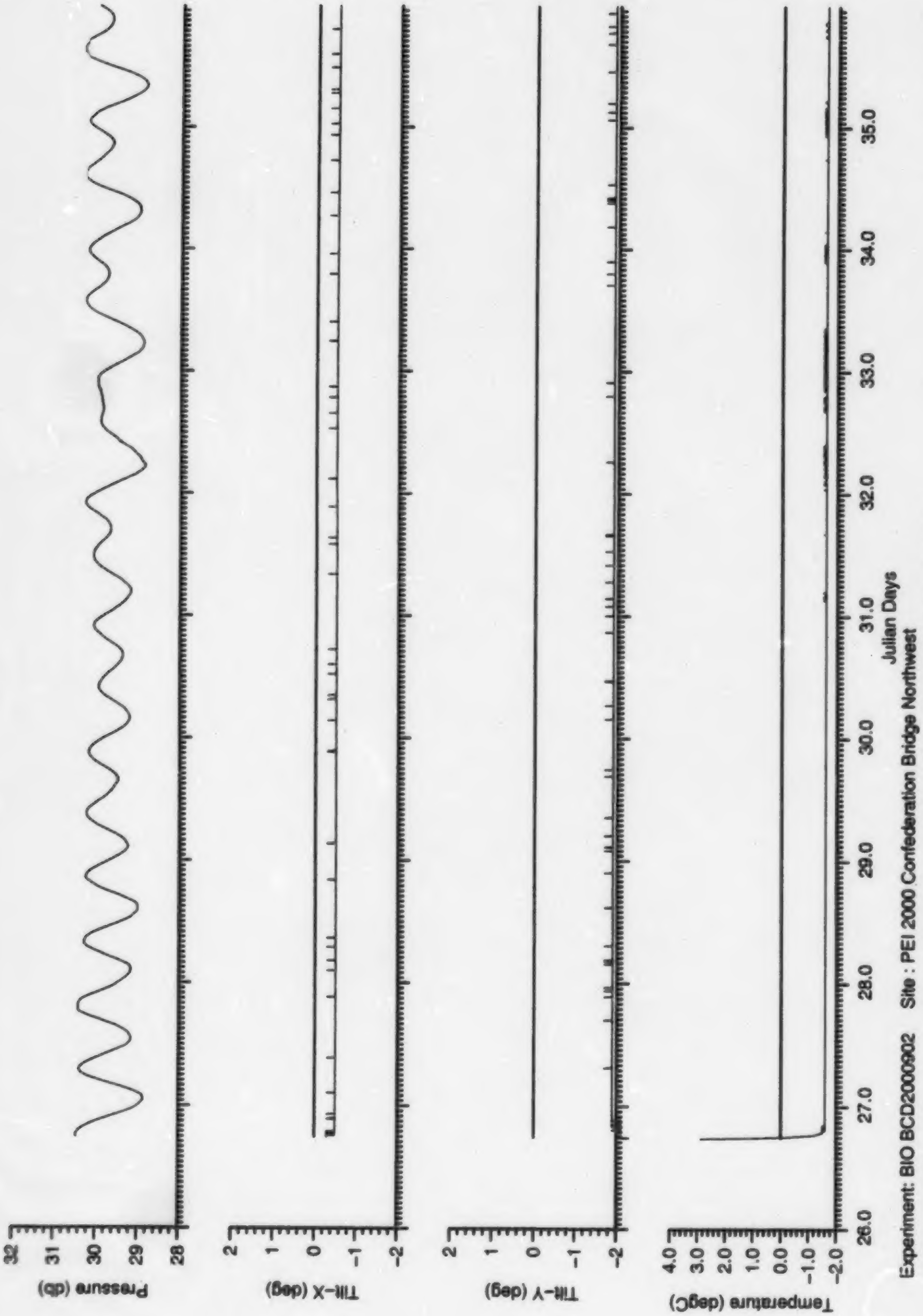
Percentiles :

5% :	0.25	Ice	=	35.2%
50% :	0.86	Open Water	=	64.8%
95% :	3.31	No Data	=	0.0%

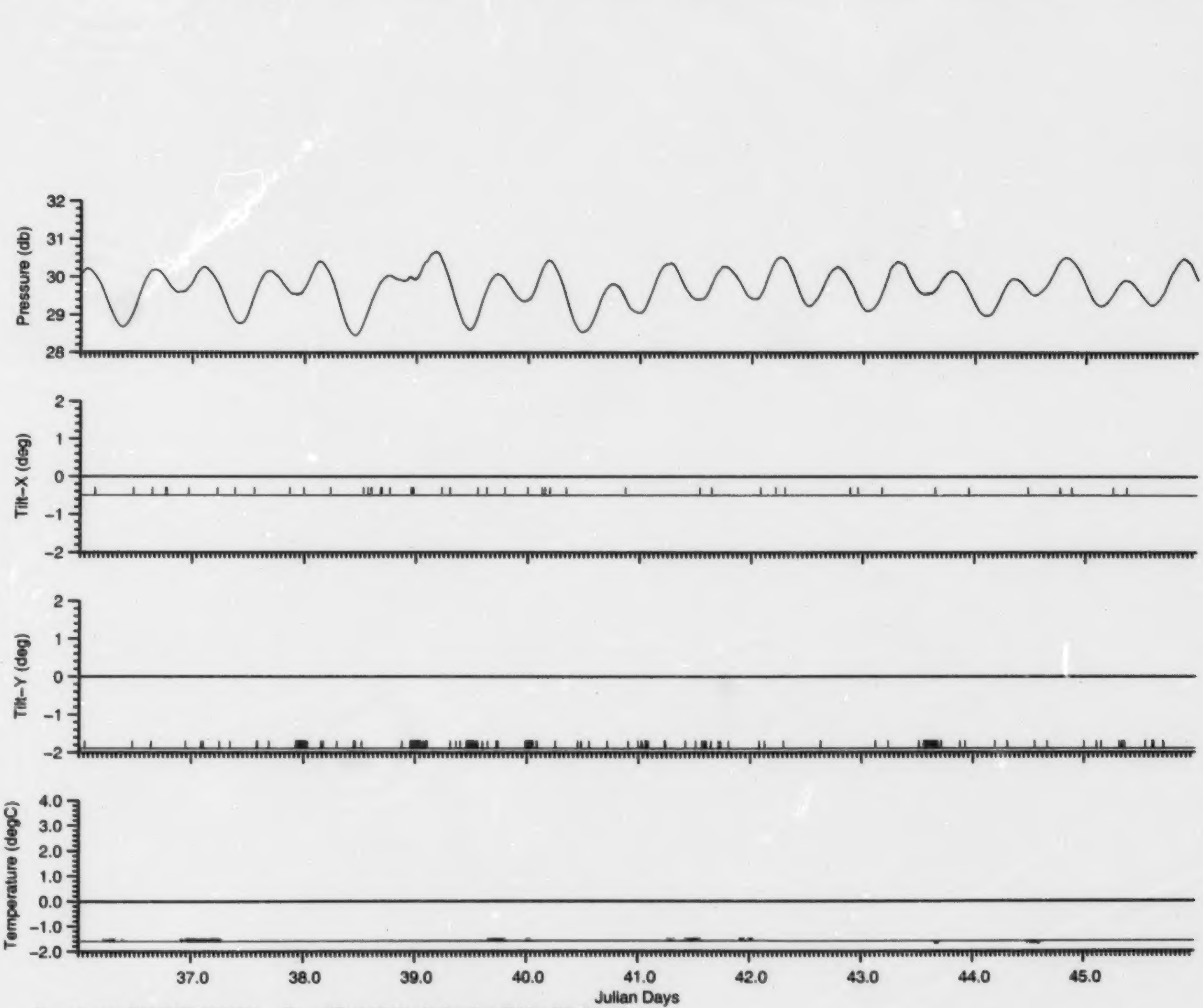
Filename : pd2000ips18_draft_H_Distance.dat

3.4.7 Temp Press Tilt-X Tilt-Y IPS 1013 Northwest 1345, Jan 26 – Apr 22

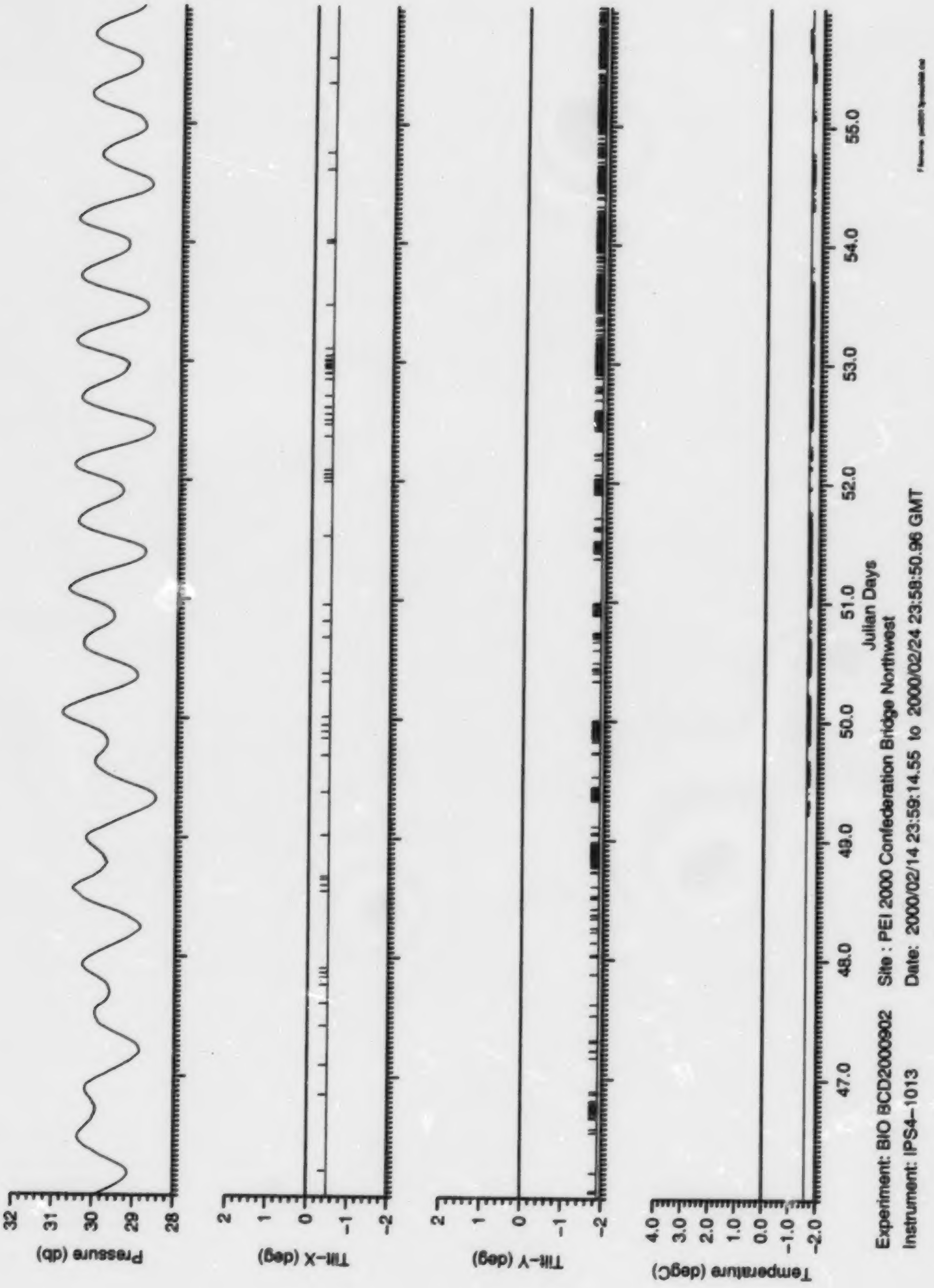
The following plots present sea Temperature, Pressure, Tilt-X and Tilt-Y from IPS instrument 1013 mooring 1345 on the Northwest side of Bridge Pier 24 at 46° 12.409N and -63° 45.524W. The IPS was attached to a bottom frame in a water depth of 20m. The instrument was deployed on a clear day with 35-knot winds in heavy ice. The data have a sample interval of approximately 1 minute. A time correction has been applied to correct for clock drift. There is minimal tilt because of the non-gimbled bottom frame mooring design.

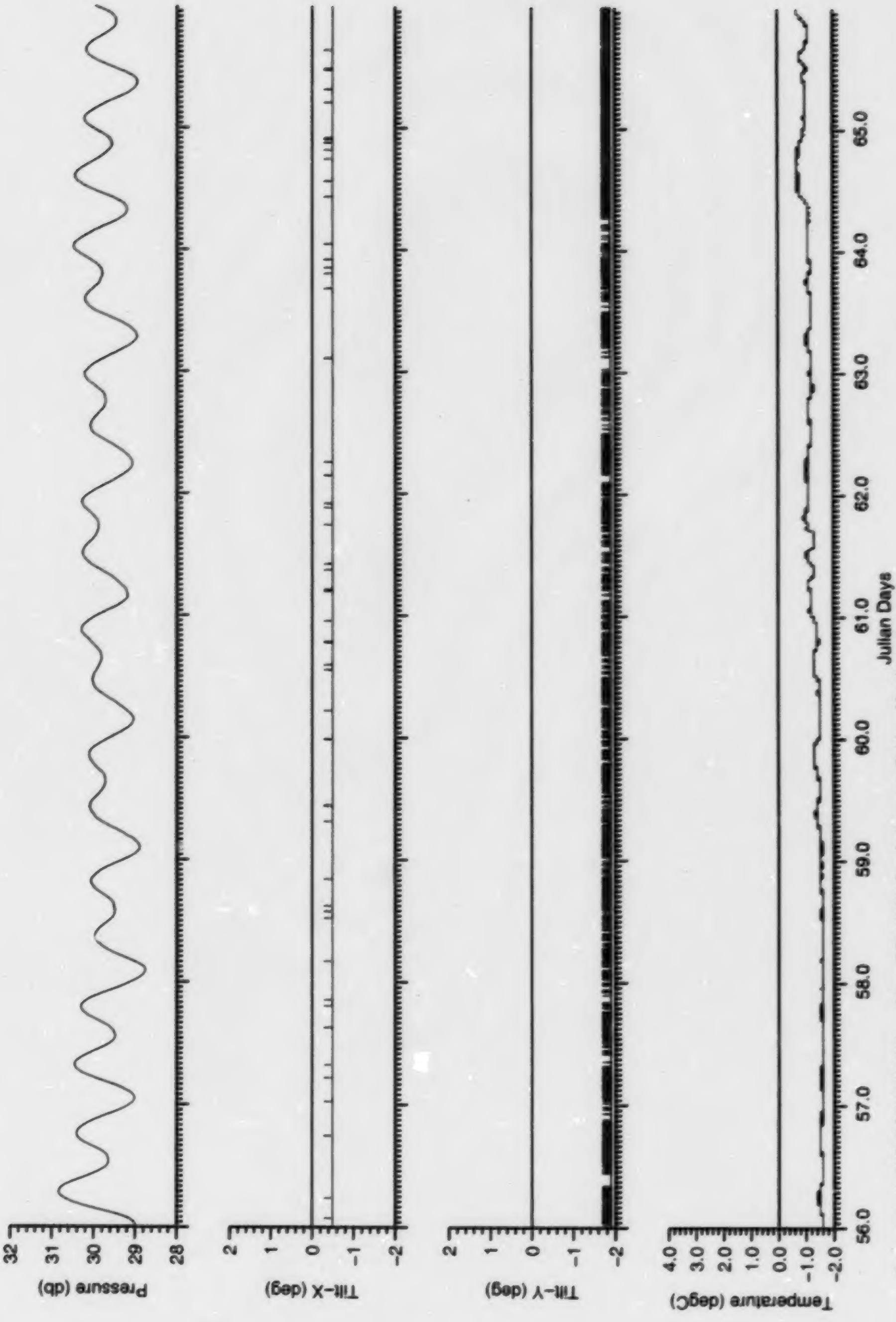


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest
Instrument: IPS4-1013 Date: 2000/01/26 17:45:00.00 to 2000/02/04 23:59:38.15 GMT



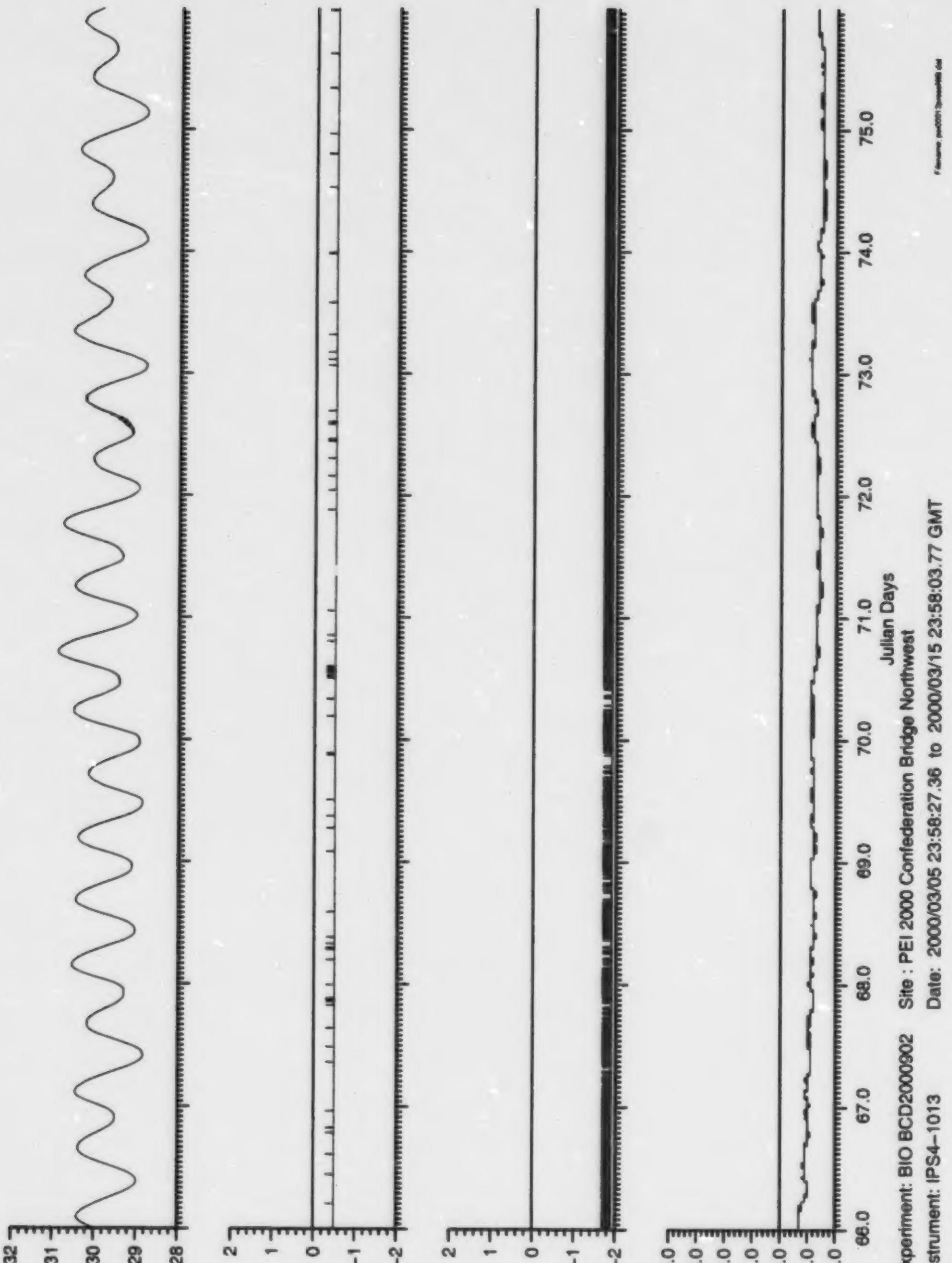
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest
Instrument: IPS4-1013 Date: 2000/02/04 23:59:38.15 to 2000/02/14 23:59:14.55 GMT


Pressure (db)
32
31
30
29
28
Tilt–X (deg)
2
1
0
−1
−2
Tilt–Y (deg)
2
1
0
−1
−2
Temperature (degC)
4.0
3.0
2.0
1.0
0.0
−1.0
−2.0
47.0
48.0
49.0
50.0
51.0
52.0
53.0
54.0
55.0
Julian Days
Experiment: BIO BCD2000902
Site : PEI 2000 Confederation Bridge Northwest
Instrument: IPS4–1013
Date: 2000/02/14 23:59:14.55 to 2000/02/24 23:58:50.96 GMT



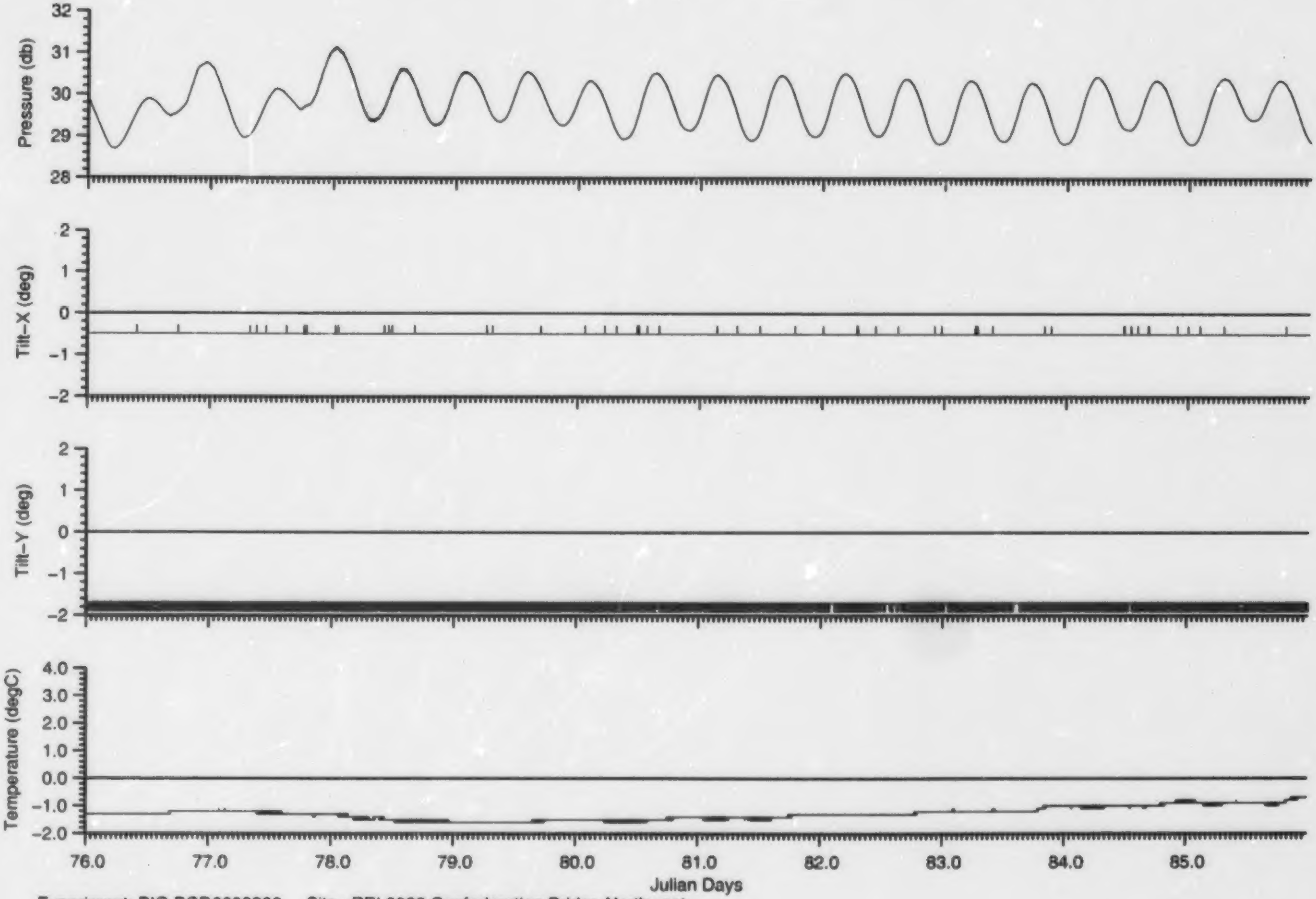
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest

Instrument: IPS4-1013 Date: 2000/02/24 23:58:50.96 to 2000/03/05 23:58:27.36 GMT



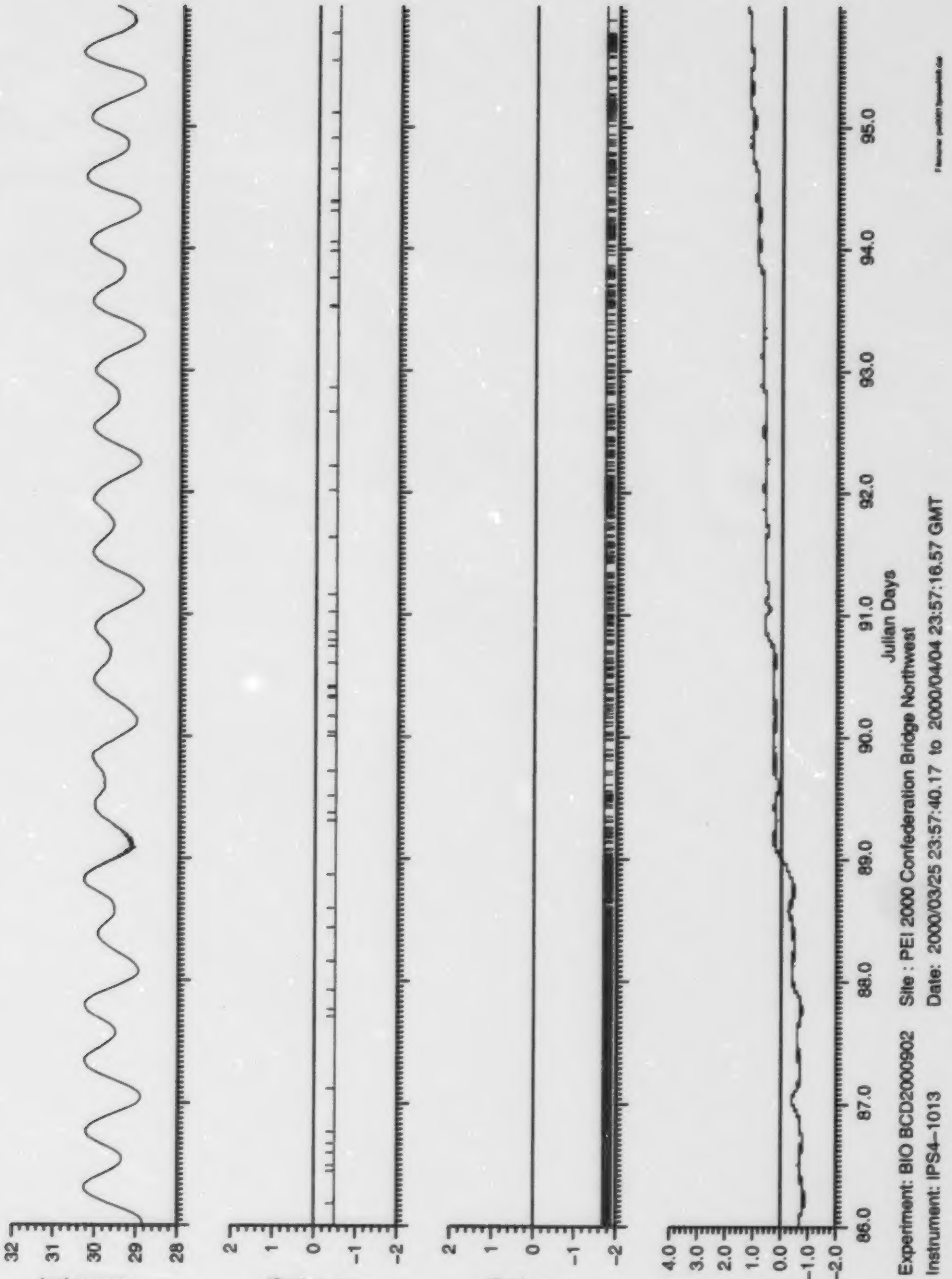
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest

Instrument: IPS4-1013 Date: 2000/03/05 23:58:27.36 to 2000/03/15 23:58:03.77 GMT

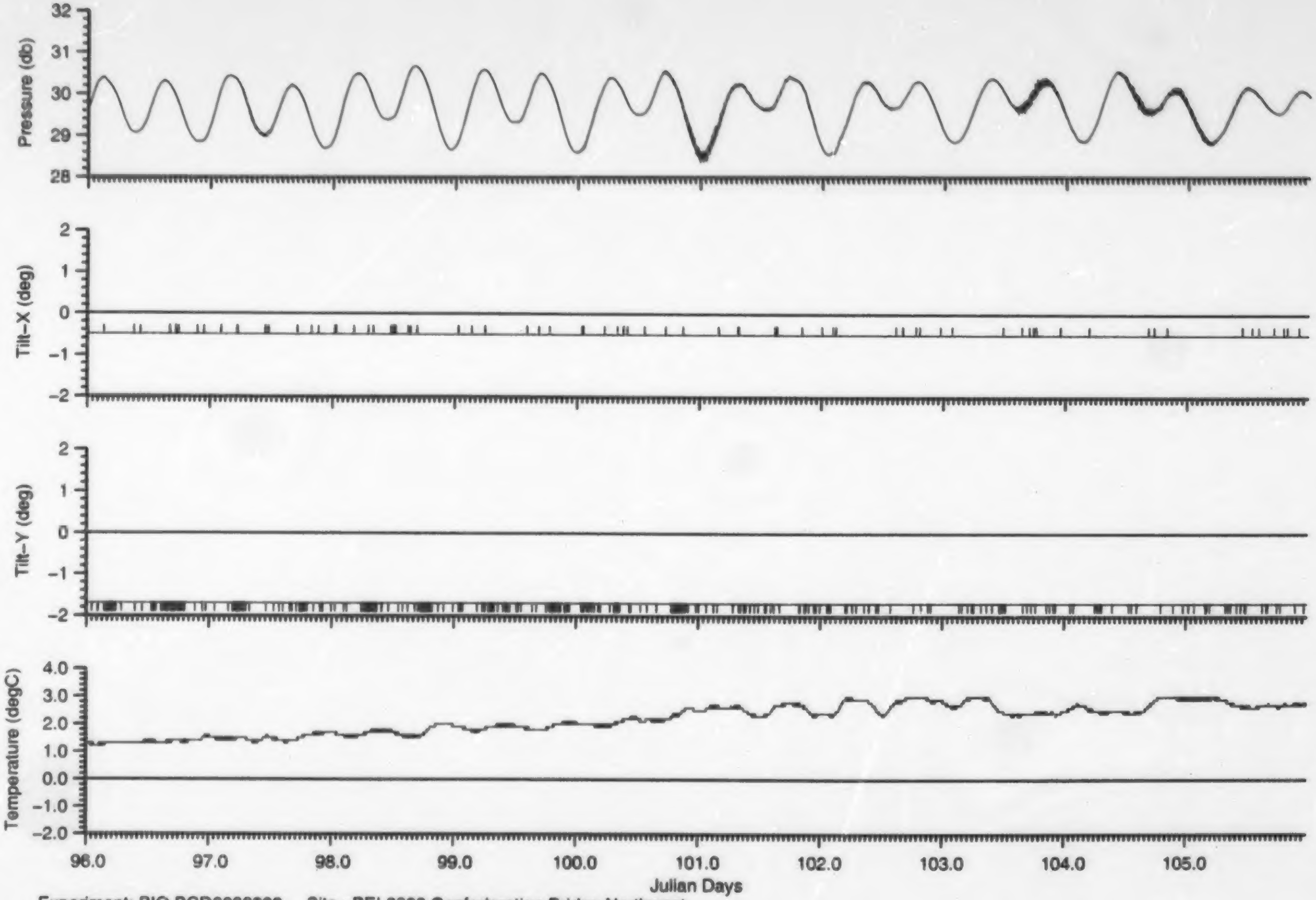


Experiment: BIO BCD2000902   Site : PEI 2000 Confederation Bridge Northwest

Instrument: IPS4−1013   Date: 2000/03/15 23:58:03.77 to 2000/03/25 23:57:40.17 GMT

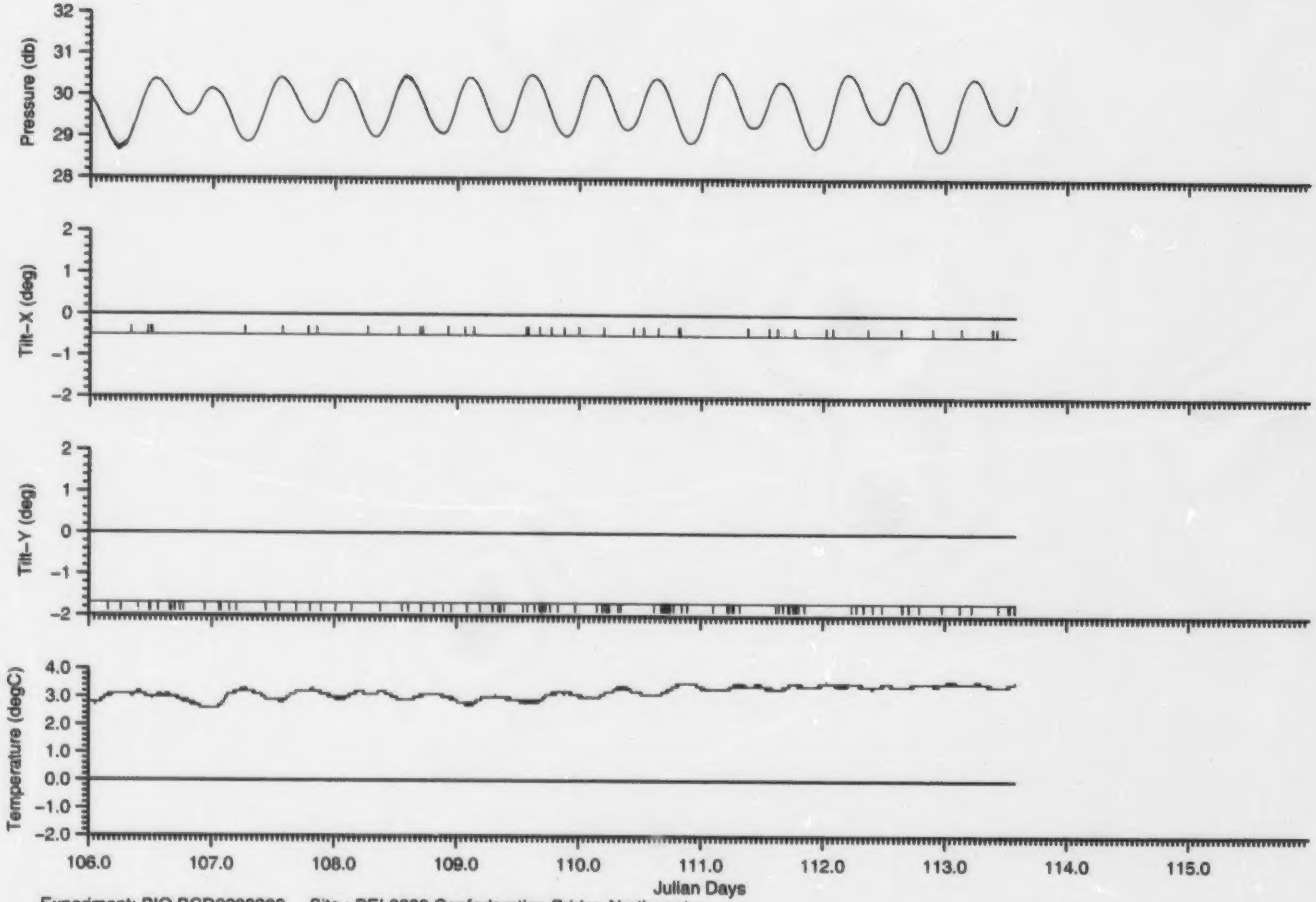


Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest
Instrument: IPS4-1013 Date: 2000/03/25 23:57:40.17 to 2000/04/04 23:57:16.57 GMT



Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest

Instrument: IPS4−1013 Date: 2000/04/04 23:57:16.57 to 2000/04/14 23:56:52.98 GMT



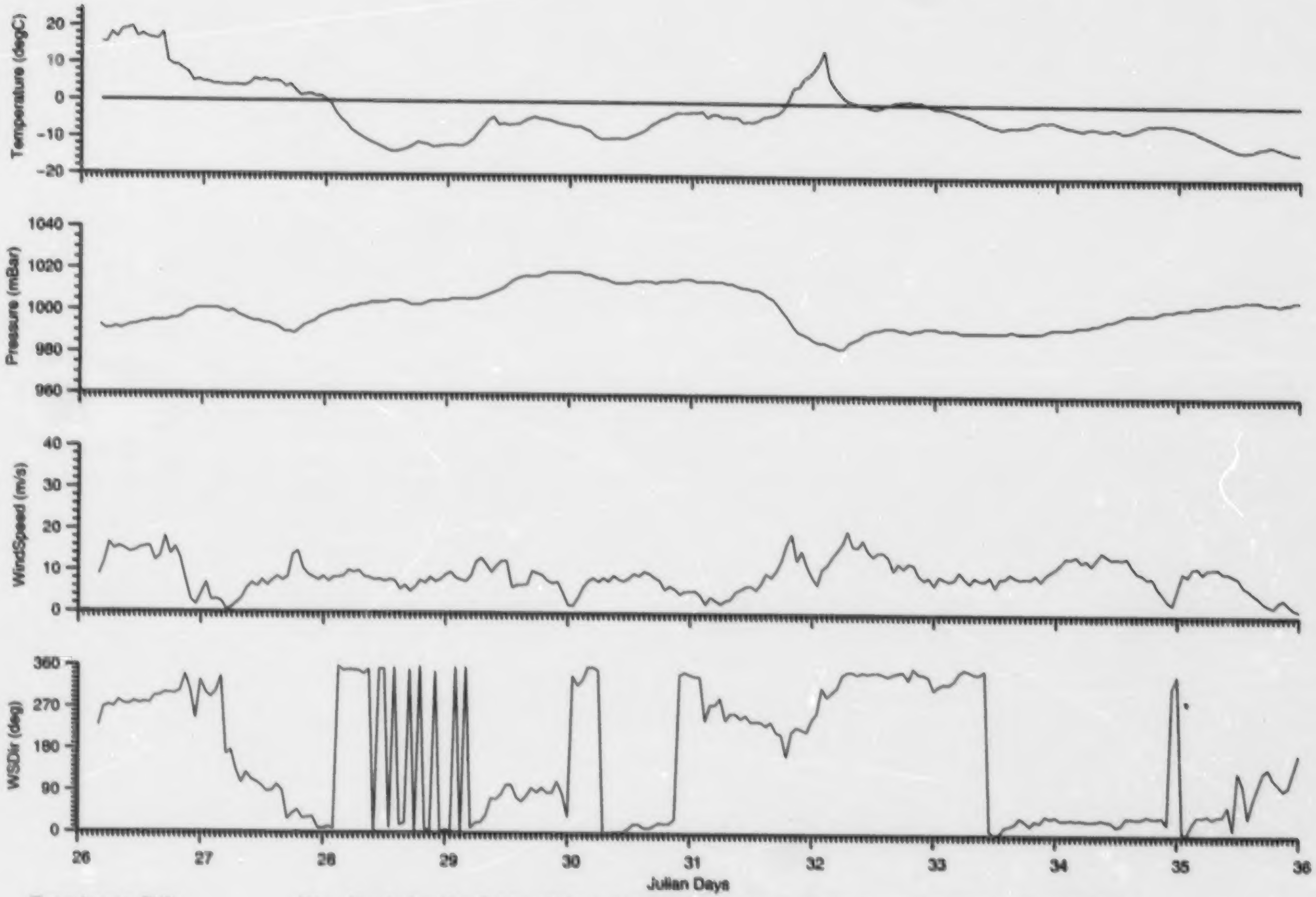
Experiment: BIO BCD2000902 Site : PEI 2000 Confederation Bridge Northwest
Instrument: IPS4–1013 Date: 2000/04/14 23:56:52.98 to 2000/04/22 13:56:35.08 GMT

3.5 Meteorological Data

Weather data were collected at the Confederation Bridge by IFN Engineering Ltd., under contract for Public Works Government Services Canada, the government department responsible for the bridge project. Weather data were also obtained from Environment Canada Weather Office in Summerside, Prince Edward Island. The data includes wind speed and direction, atmospheric pressure and temperature.

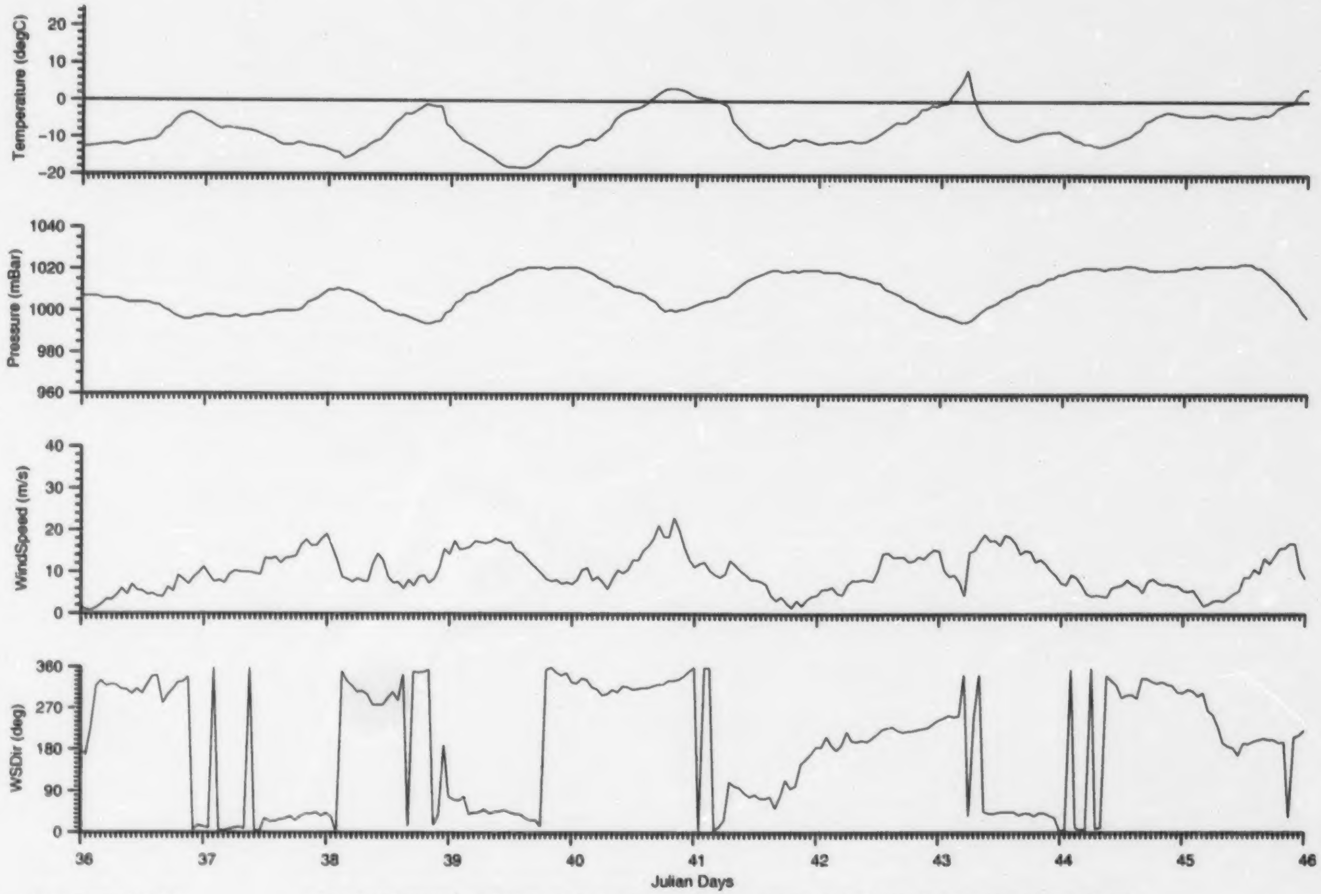
3.5.1 Confederation Bridge Sensor, Jan 26 – Mar 29

The following data represents air temperature, pressure, wind speed and direction collected on the Confederation Bridge from Jan 26th to March 29th 2000. Hourly data using the 50-60 minute average were used, adjusting the start time back 5 minutes to adjust to the centre of the bin. The direction channel for these plots was merged in from another sensor on the Bridge as there was erroneous direction data from this sensor. The temperature sensor did not work properly either. Fifty degrees were added to the direction data to align with the axis of flow of the channel. Four hours were added to the time channel to convert from Atlantic Standard Time to Universal Time.



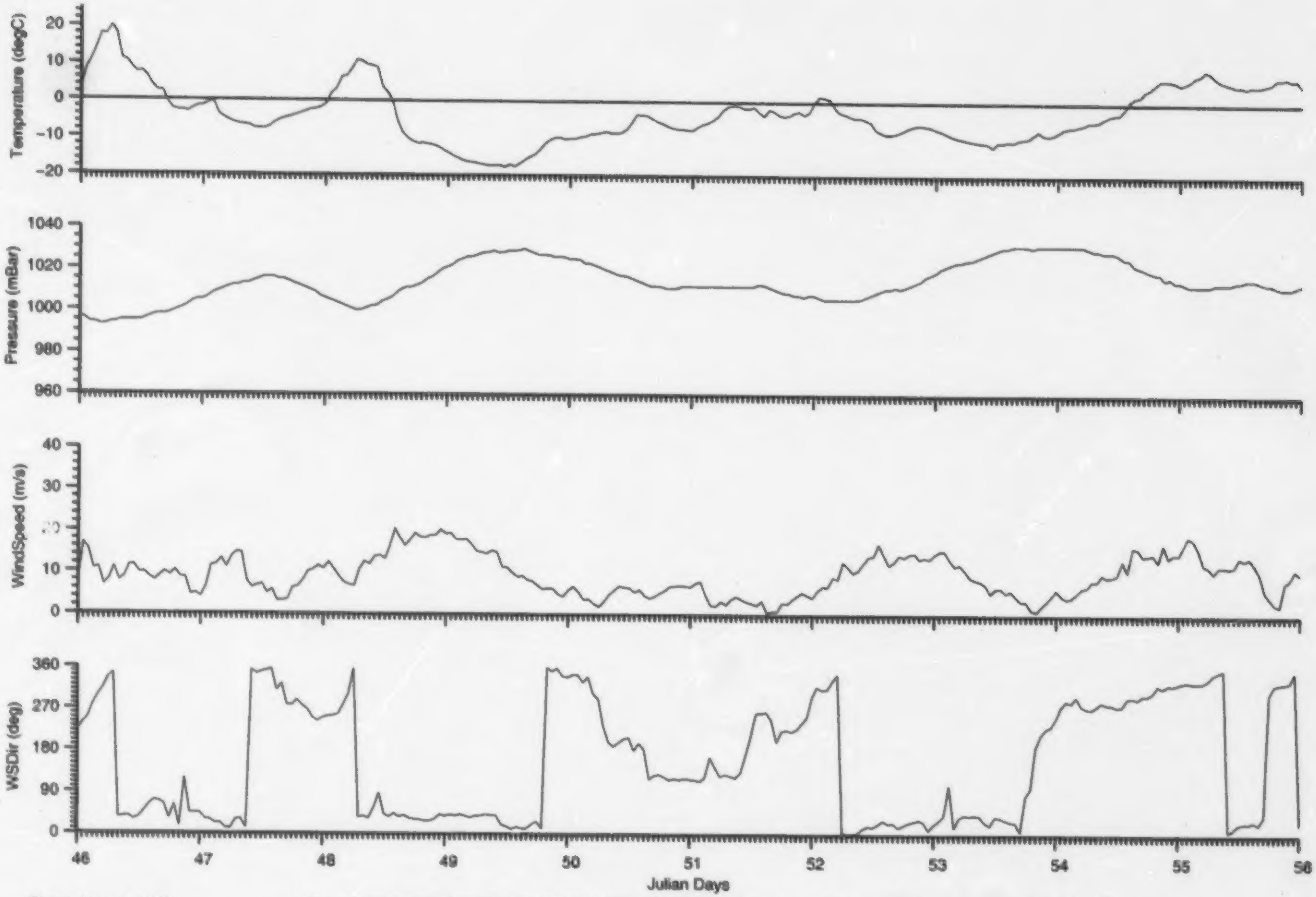
Experiment: BIO
Instrument: Met Station

Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/01/26 04:00:00.00 to 2000/02/04 23:59:60.00 GMT



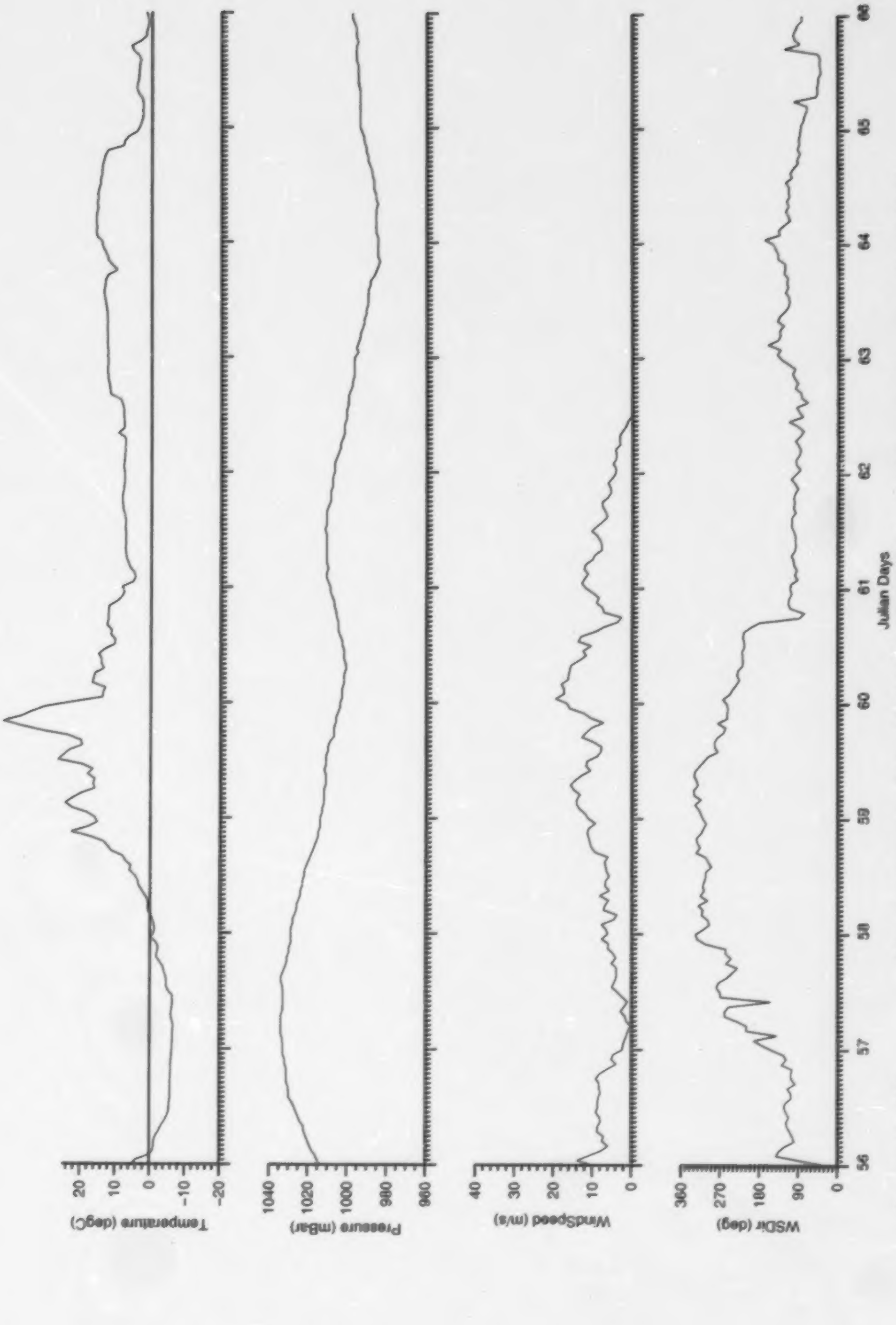
Experiment: BIO
Instrument: Met Station

Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/02/05 00:00:00.00 to 2000/02/15 00:00:00.00 GMT



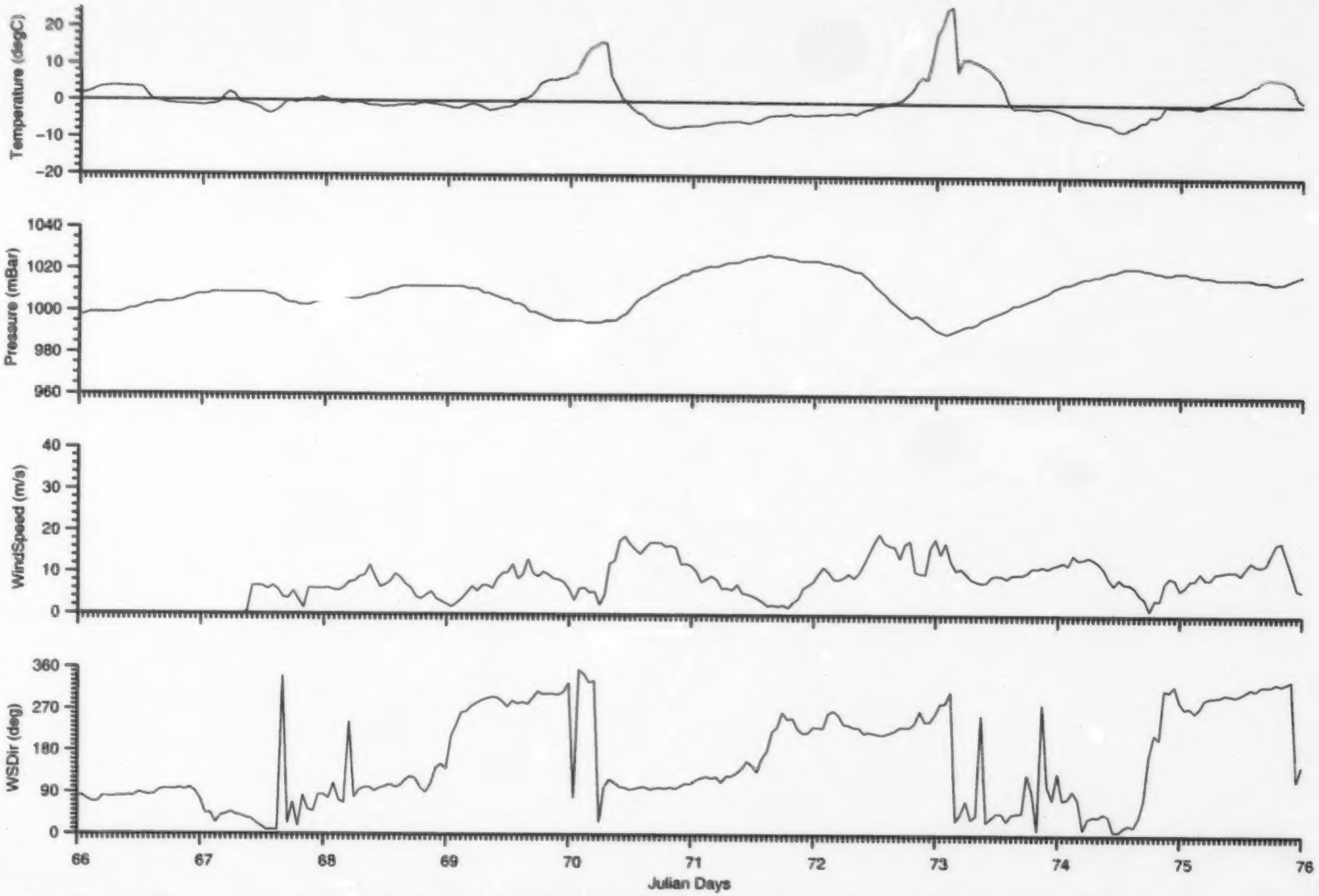
Experiment: BIO
Instrument: Met Station

Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/02/15 00:00:00.00 to 2000/02/25 00:00:00.00 GMT



Experiment: BIO
Instrument: Met Station

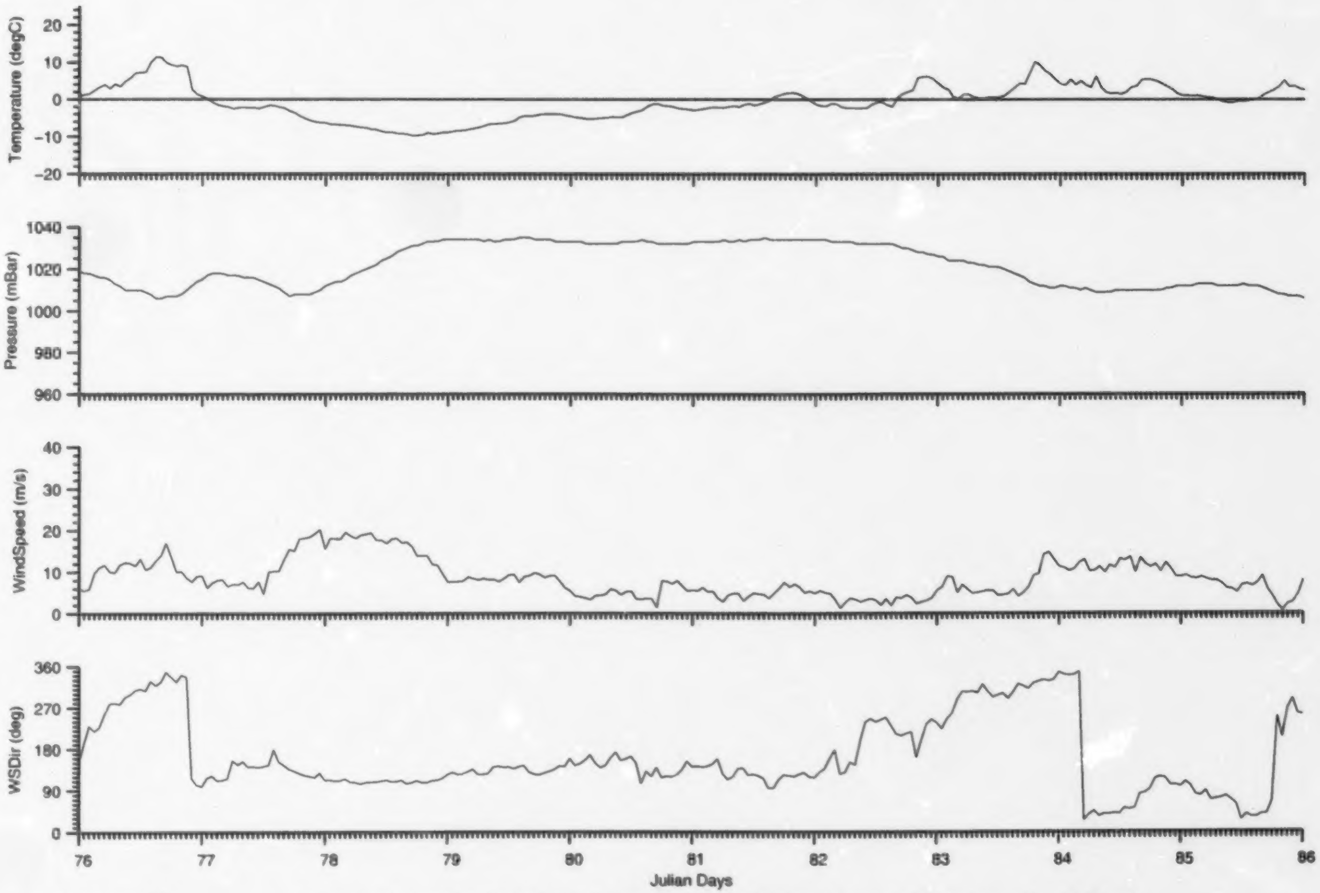
Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/02/25 00:00:00.00 to 2000/03/06 00:00:00.00 GMT



Experiment: BIO
Instrument: Met Station

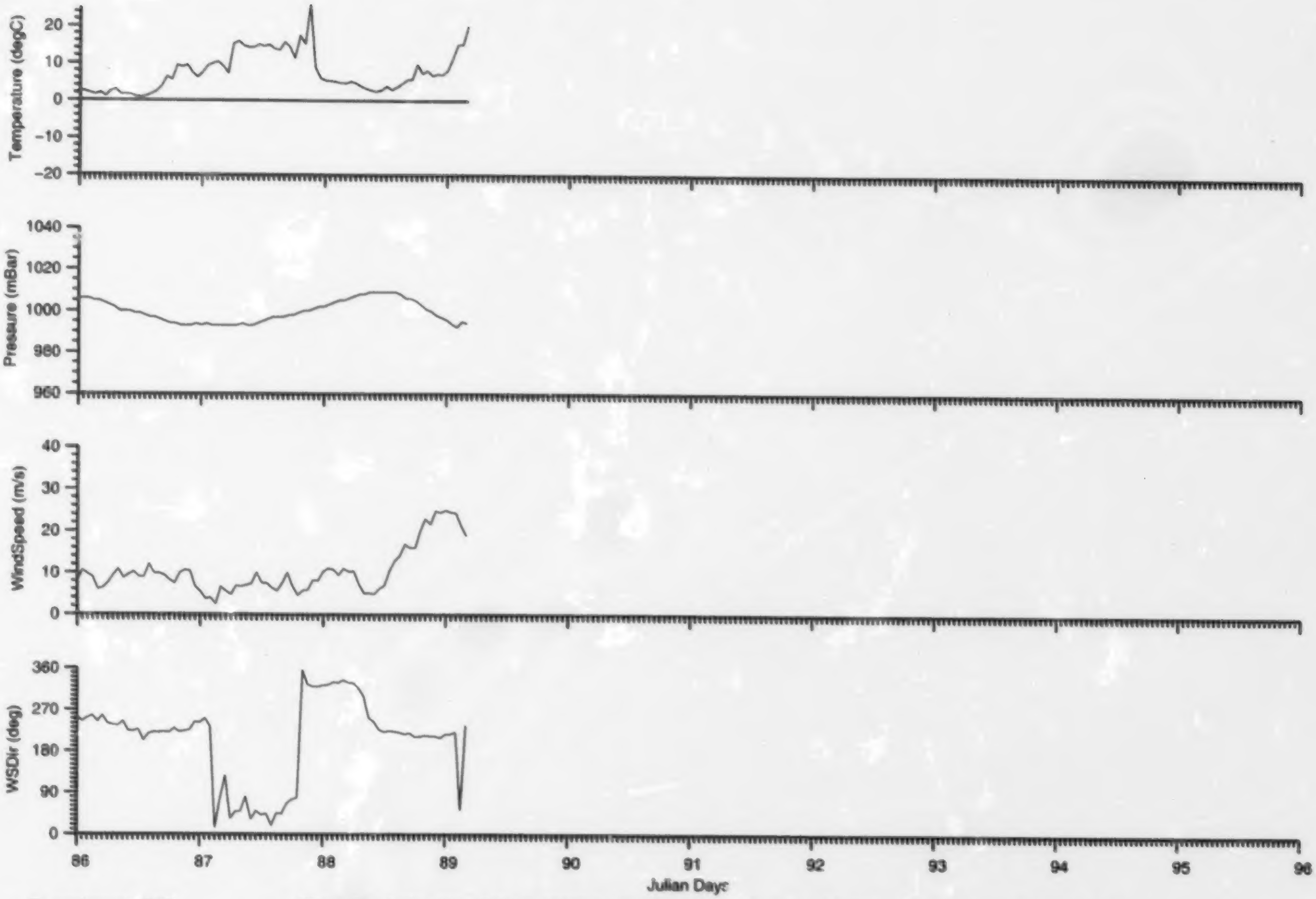
Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/03/06 00:00:00.00 to 2000/03/16 00:00:00.00 GMT

Filename: [illegible]



Experiment: BIO
Instrument: Met Station

Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/03/16 00:00:00.00 to 2000/03/26 00:00:00.00 GMT

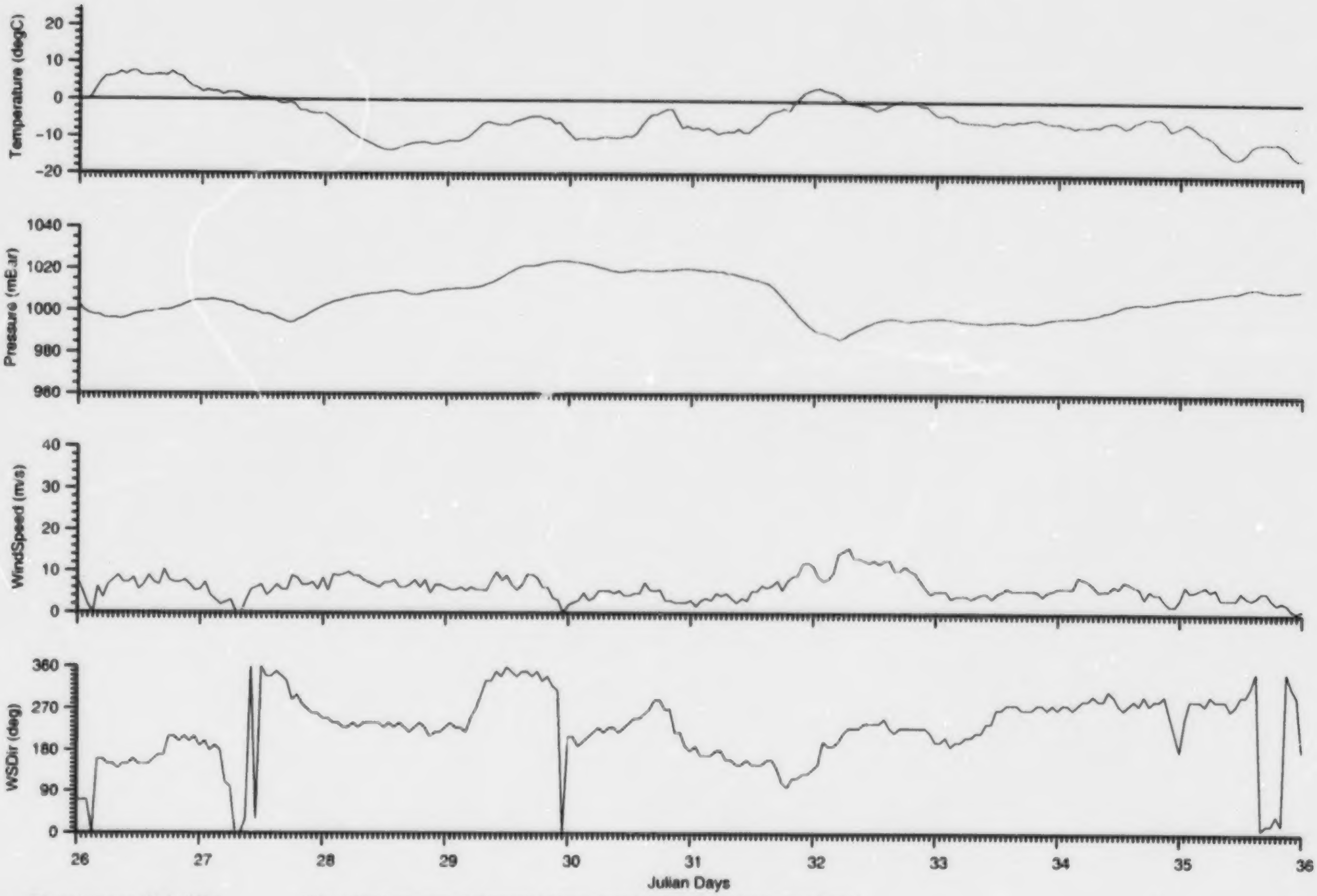


Experiment: BIO
Instrument: Met Station

Site : Confederation Bridge 2000 (direction channel merged from another sensor along bridge)
Date: 2000/03/26 00:00:00.00 to 2000/03/29 04:00:00.00 GMT

3.5.2 Environment Canada Summerside, Jan 26 – May 1

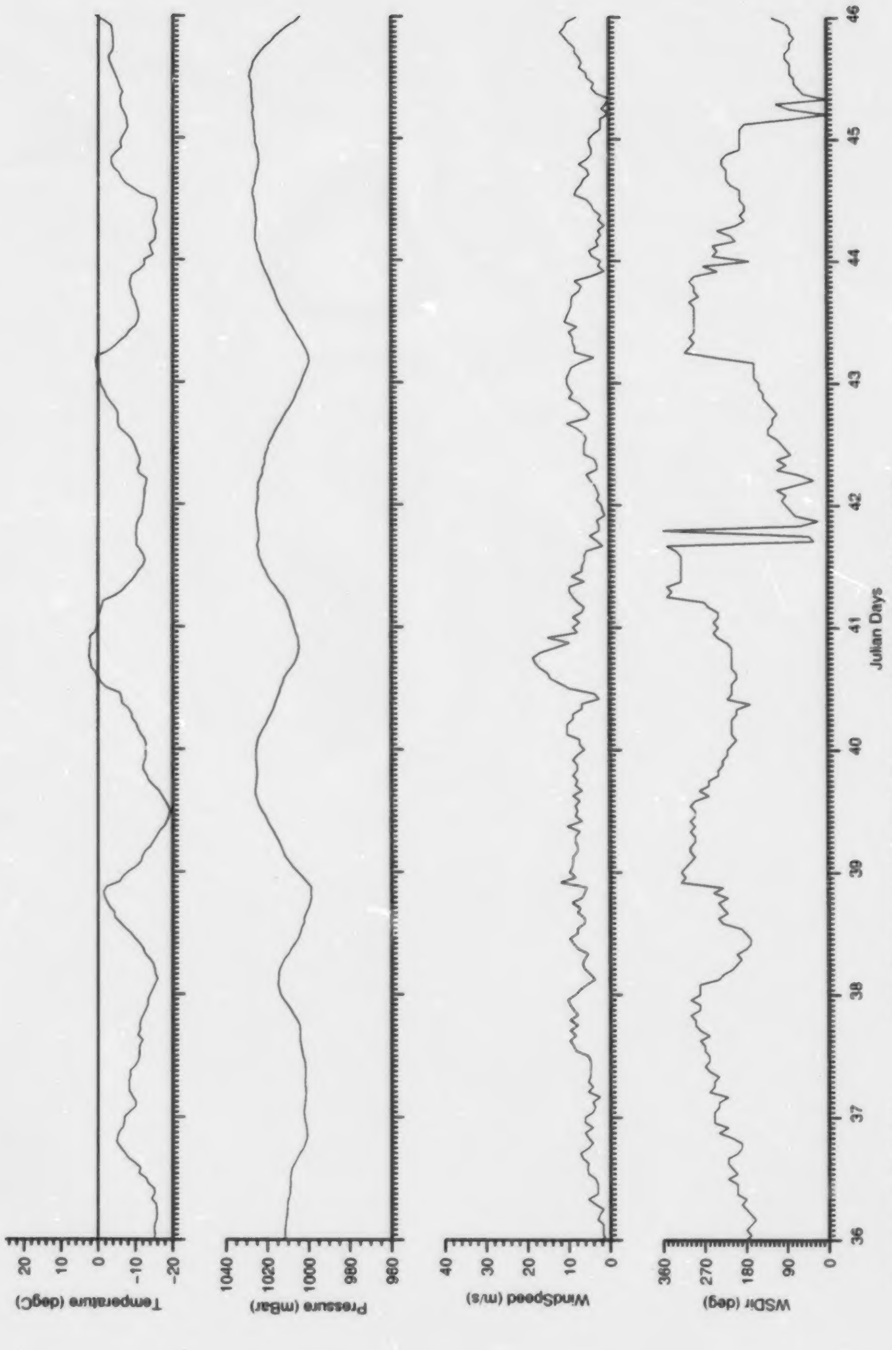
The following data were obtained from Environment Canada Weather Office in Summerside, Prince Edward Island collected in Summerside at 46.44°N –63.83°W at 19.5m. The data included wind speed and direction, atmospheric pressure and temperature. Corrections to the data to convert them to degrees, meters per second and decibars were applied. The atmospheric pressure from this sensor was used for the adjustment of the IPS pressure data to water level data.



Experiment: AES WS
Instrument: Met Station

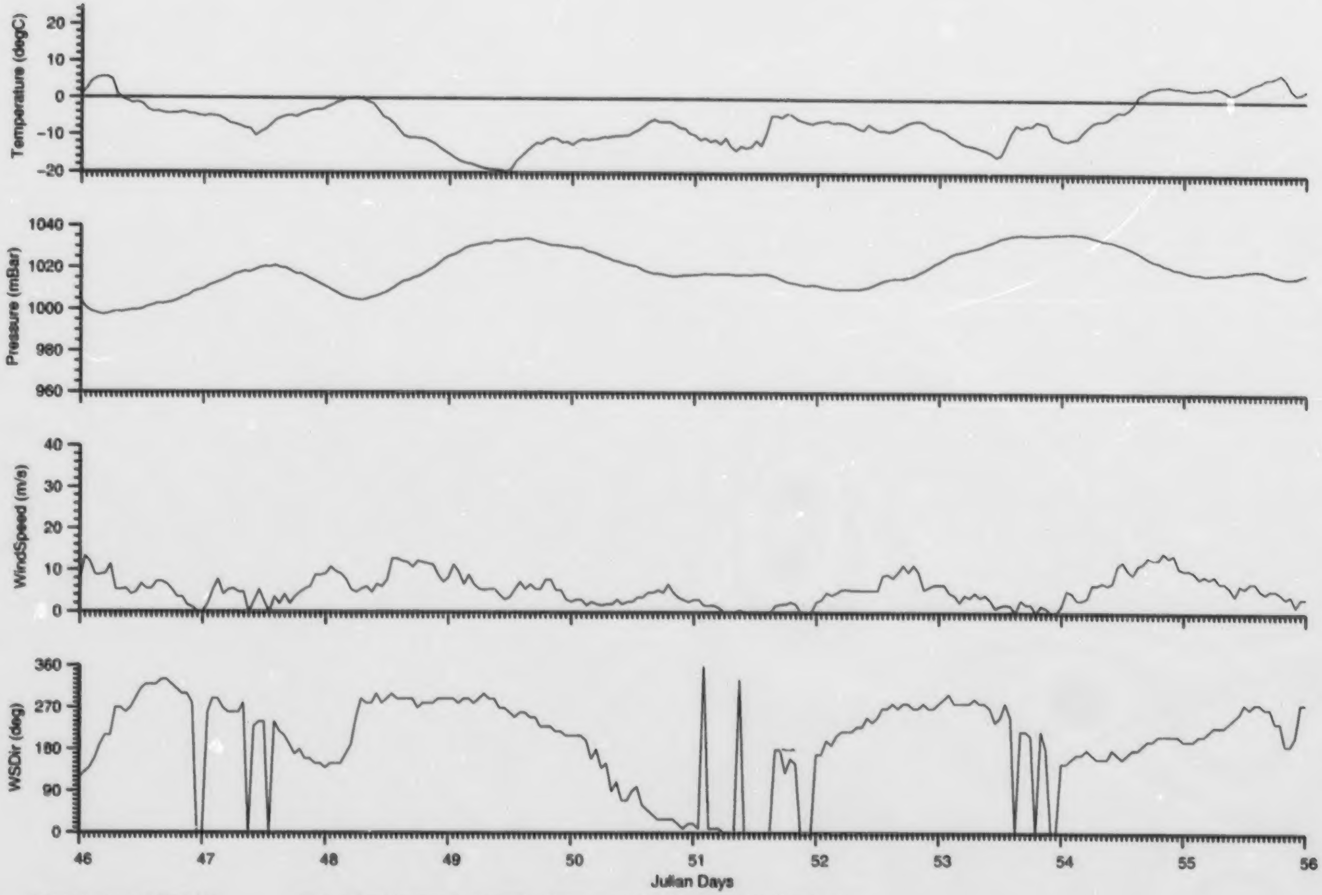
Site : Environment Canada Summerside Weather Station 2000
Date: 2000/01/26 00:00:00.00 to 2000/02/05 00:00:00.00 GMT

Filename: Summerside2000WS.dat



Experiment: AES WS
Instrument: Met Station

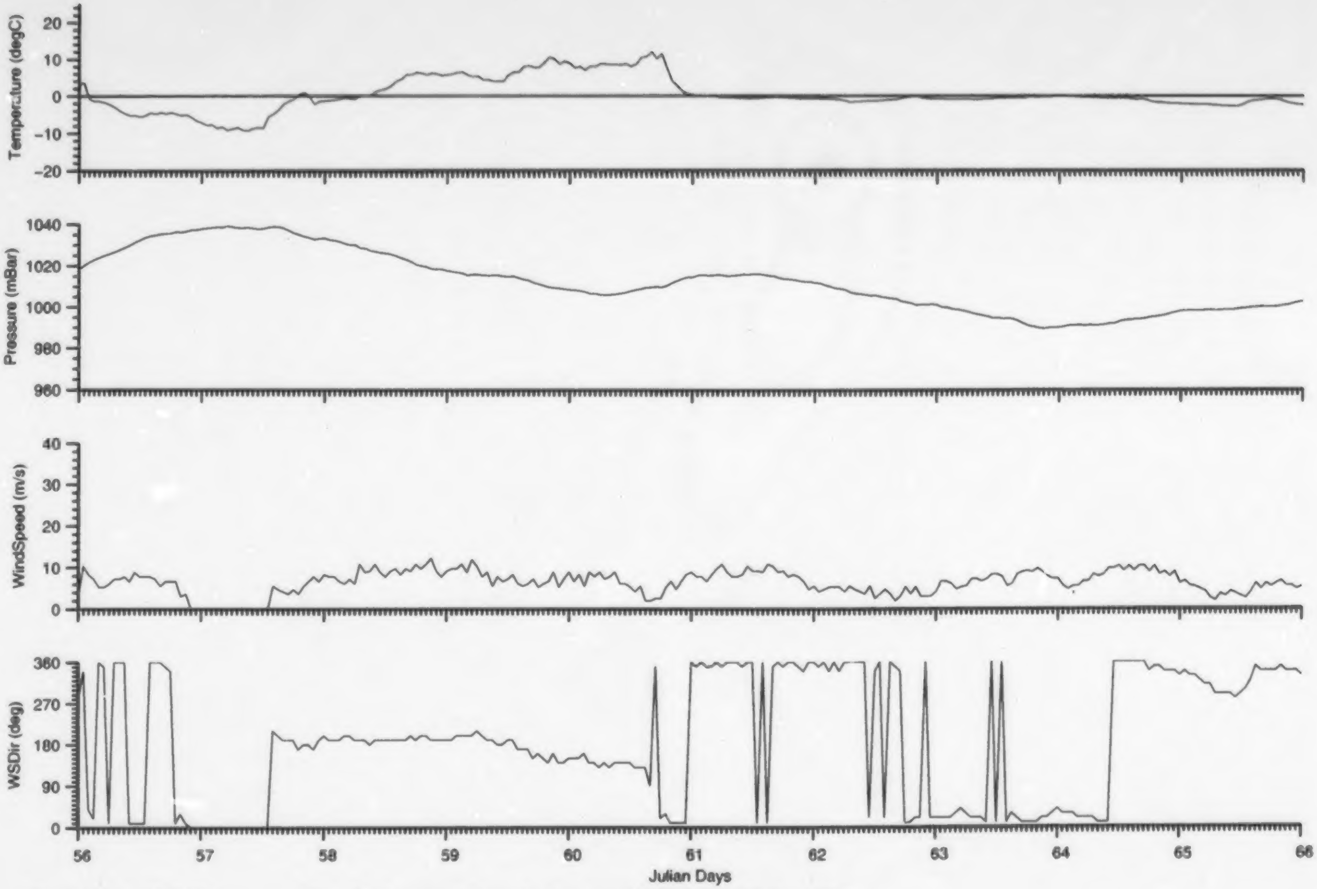
Site : Environment Canada Summerside Weather Station 2000
Date: 2000/02/05 00:00:00.00 to 2000/02/15 00:00:00.00 GMT



Experiment: AES WS
Instrument: Met Station

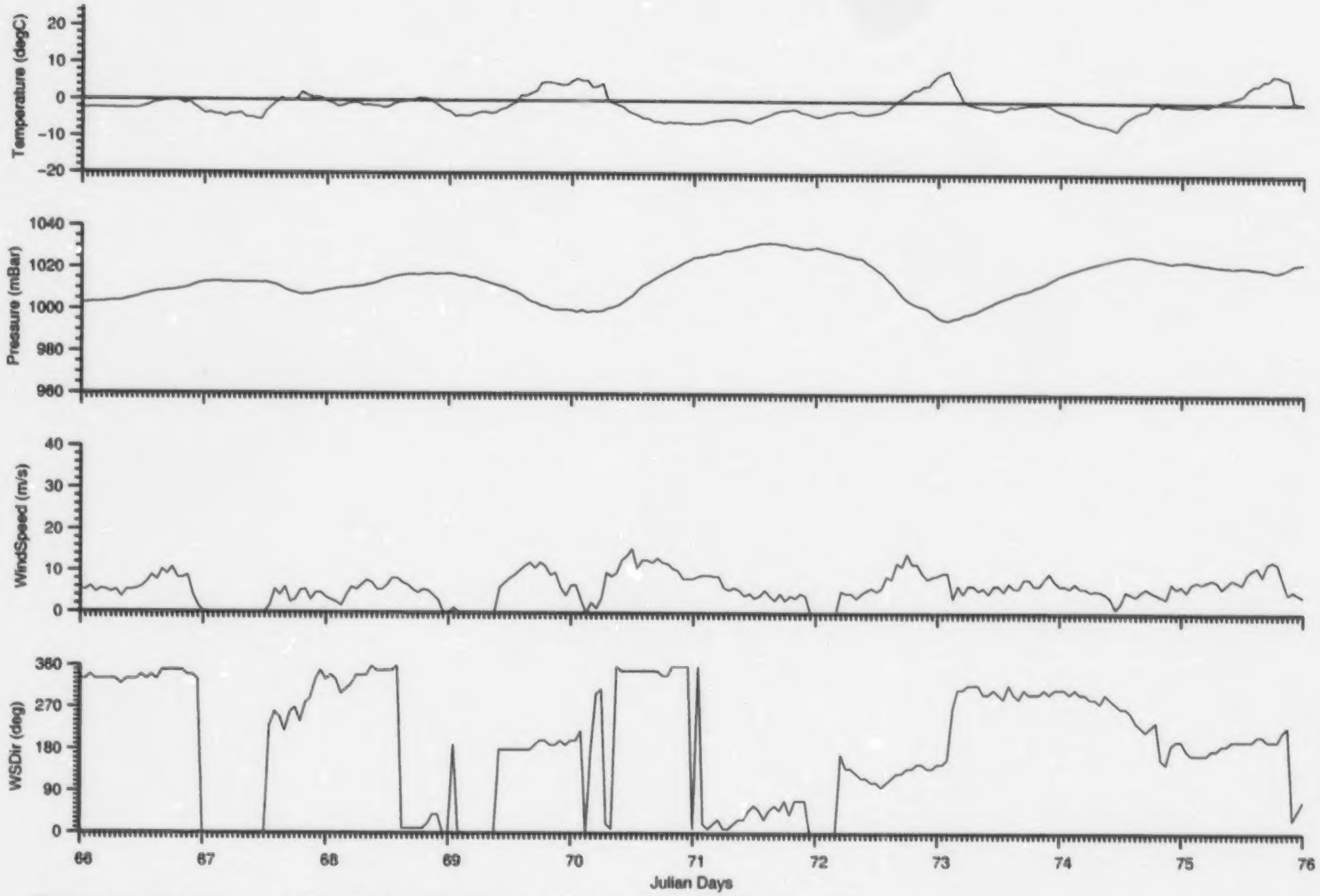
Site : Environment Canada Summerside Weather Station 2000
Date: 2000/02/15 00:00:00.00 to 2000/02/25 00:00:00.00 GMT

Filename: Summerside2000WS.dat



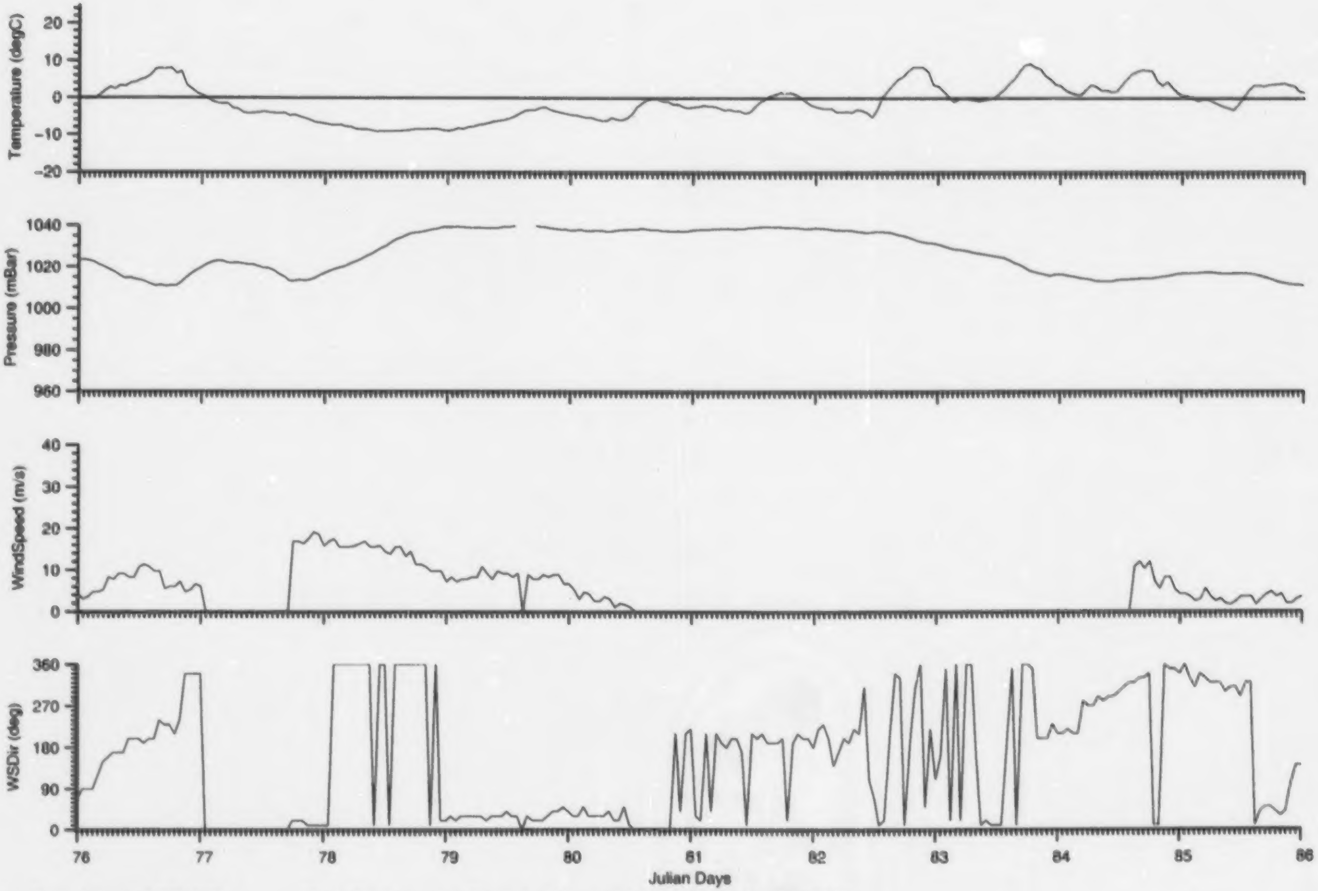
Experiment: AES WS
Instrument: Met Station

Site : Environment Canada Summerside Weather Station 2000
Date: 2000/02/25 00:00:00.00 to 2000/03/06 00:00:00.00 GMT



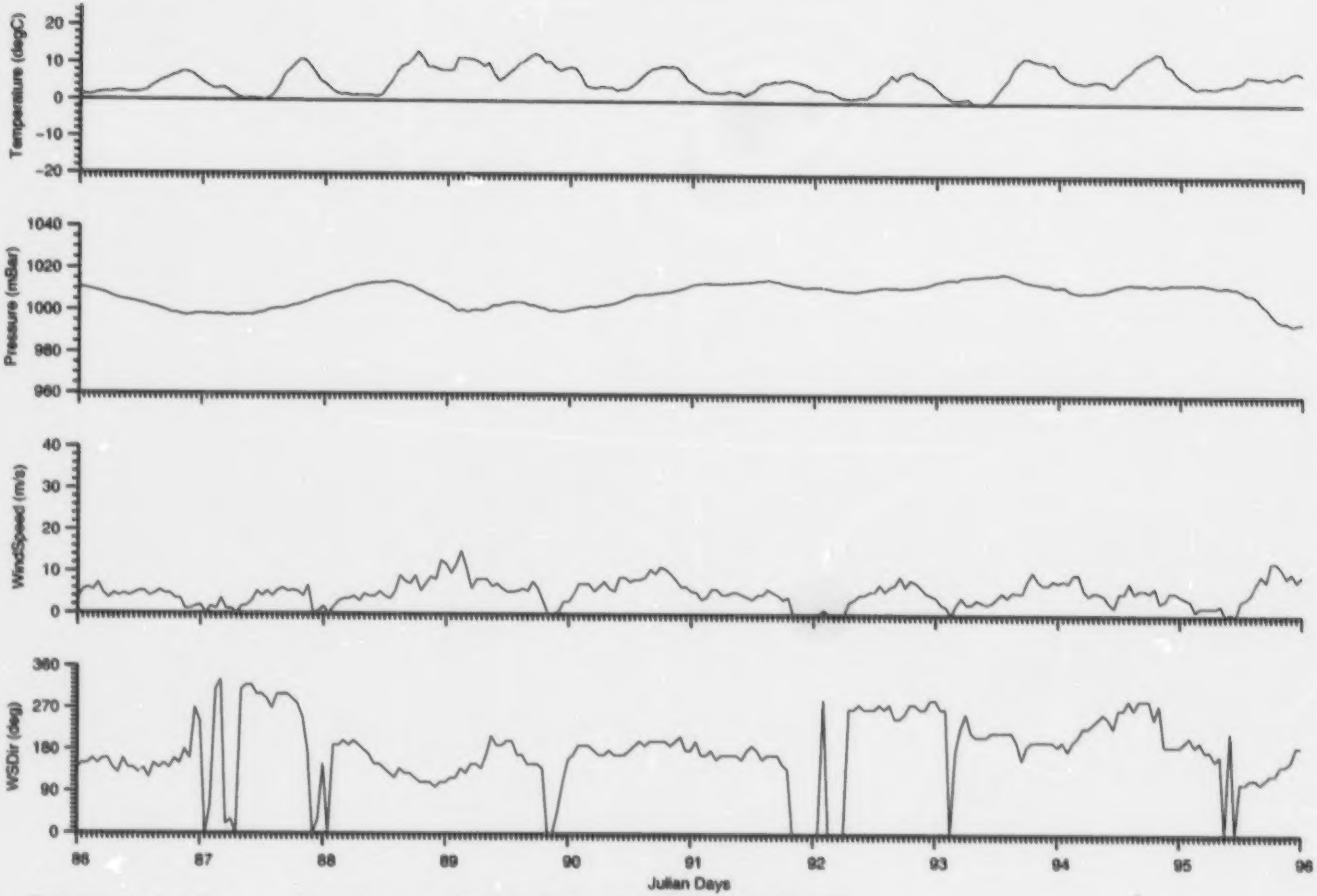
Experiment: AES WS
Instrument: Met Station

Site : Environment Canada Summerside Weather Station 2000
Date: 2000/03/06 00:00:00.00 to 2000/03/16 00:00:00.00 GMT



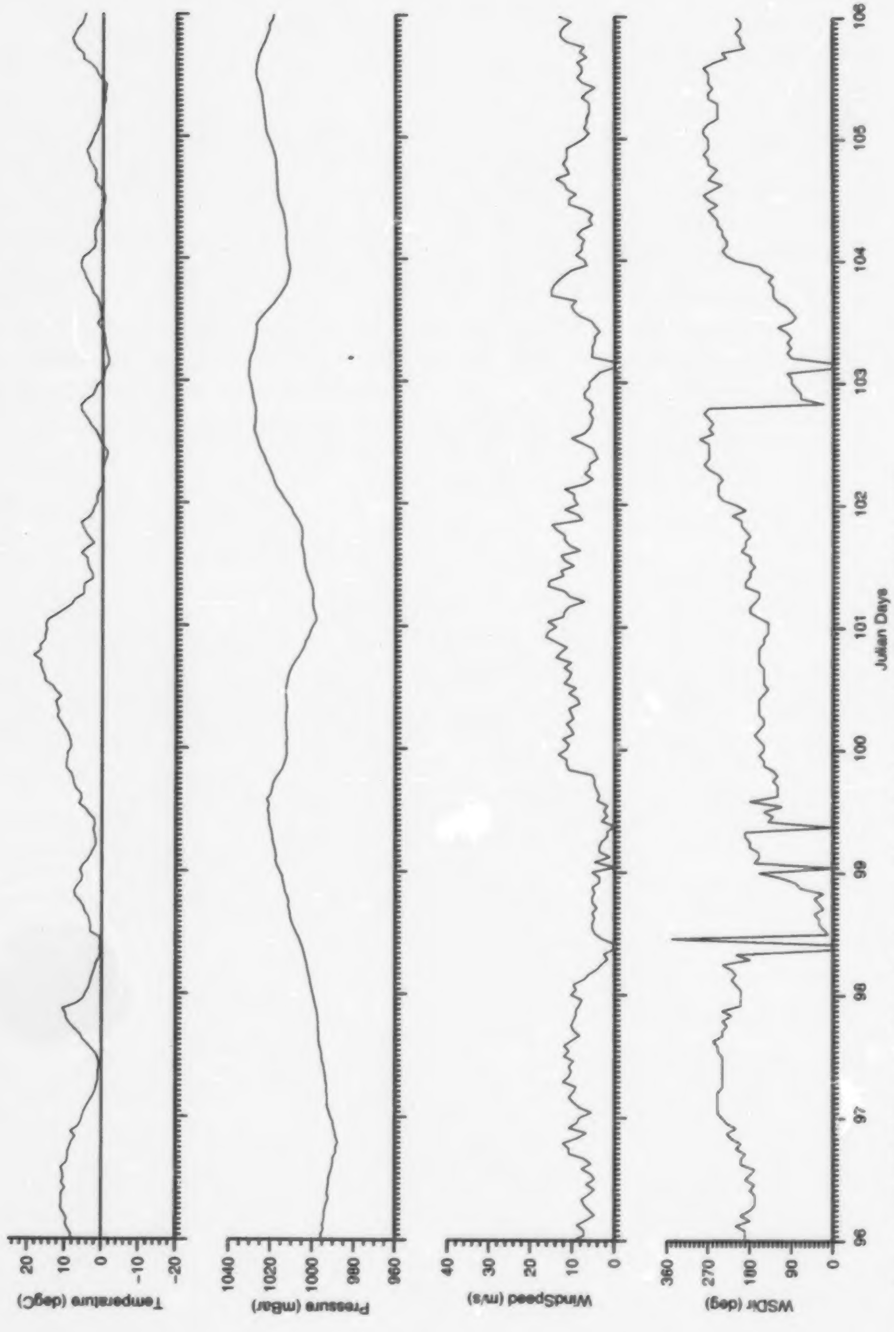
Experiment: AES WS
Instrument: Met Station

Site : Environment Canada Summerside Weather Station 2000
Date: 2000/03/16 00:00:00.00 to 2000/03/26 00:00:00.00 GMT



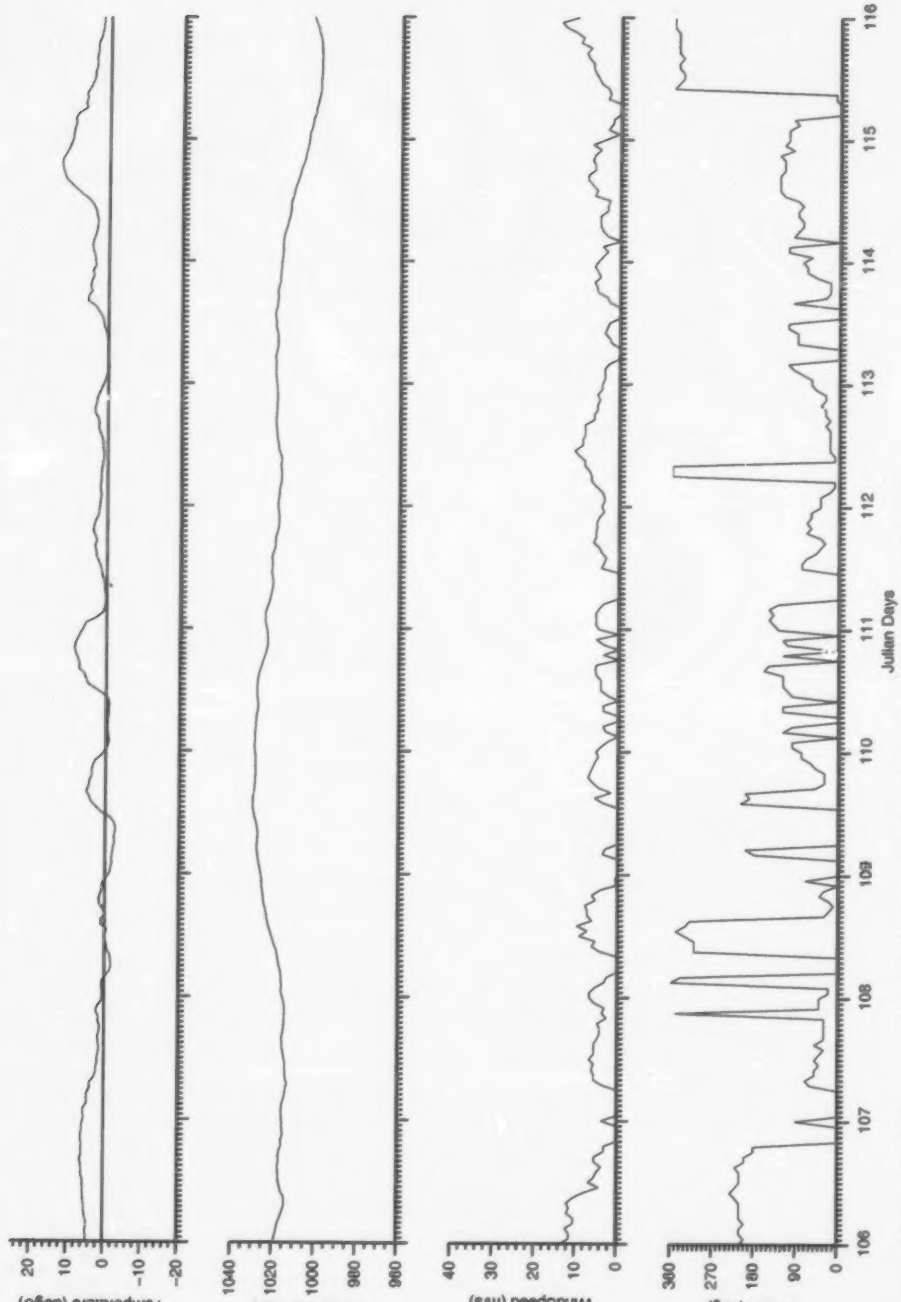
Experiment: AES WS
Instrument: Met Station

Site : Environment Canada Summerside Weather Station 2000
Date: 2000/03/26 00:00:00.00 to 2000/04/05 00:00:00.00 GMT



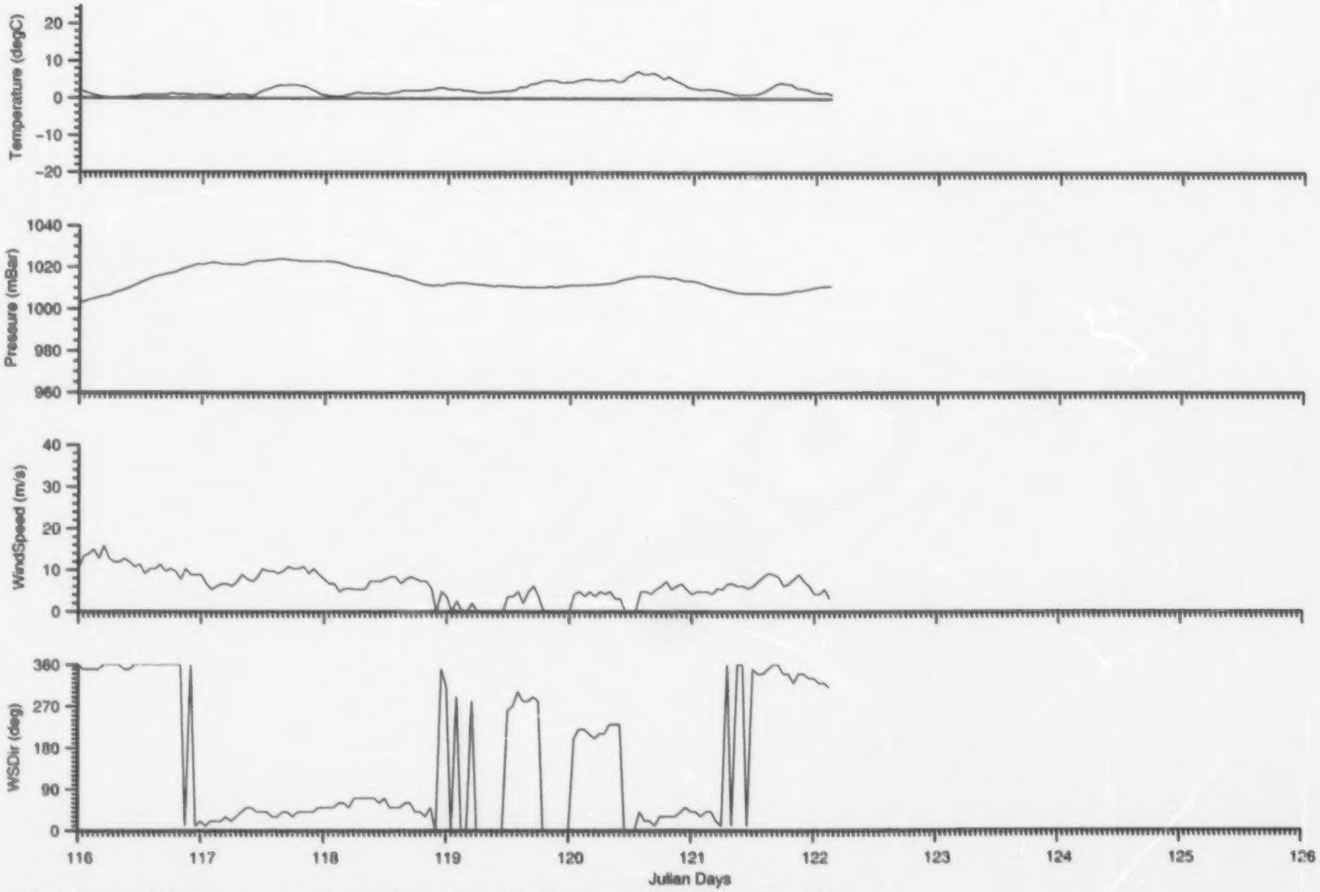
Experiment: AES V/S Site : Environment Canada Summerside Weather Station 2000

Instrument: Met Station Date: 2000/04/05 00:00:00.00 to 2000/04/15 00:00:00.00 GMT



Experiment: AES WS
Instrument: Met Station

Site : Environment Canada Summerside Weather Station 2000
Date: 2000/04/15 00:00:00.00 to 2000/04/25 00:00:00.00 GMT



Experiment: AES WS
Instrument: Met Station

Site : Environment Canada Summerside Weather Station 2000
Date: 2000/04/25 00:00:00.00 to 2000/05/01 03:00:00.00 GMT

4 ACKNOWLEDGMENTS

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